COMPUTERWORLD

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NEWSPAPER

NEWS IN BRIEF

Wisconsin University Bomber Gets 23 Years

MADISON, Wis. Karleton Louis Armstrong was sentenced to 23 years in prison after pleading guilty to charges stemming from the Aug. 24, 1970, bombing of the University of Wisconsin Army Mathematics Research Center [CW, Oct. 10]. A physics researcher was killed in the explosion and a Control Data Corp. 3600 system was destroyed.

Circuit Judge William C. Sachtjen handed down concurrent sentences of 15 years on each of four arson counts; 10 years on a possession of explosives count; and 23 years on a count of second-degree murder. Armstrong has been assigned to Waupun State Prison.

Armstrong and his defense lawyers contended that the death of Robert Fassnacht, the physicist, was "accidental" and that Armstrong was unaware that he was in the building at the time of the bombing.

San Bernardino County's DP Proves Itself, No FM Here

CW West Coast Bureau

SAN BERNARDINO, Calif. – A feasibility study on turning the county data processing department over to an outside firm has recommended that the county stay with its own operation.

The study, which was prompted by Orange County's recent switch to facilities management, described San Bernardino County's data processing operations as "one of the most efficient and cost-effective operations in the state."

The study also termed the county DP costs as "comparatively lower than other counties performing similar levels of service."

The Orange County facilities management endeavor, it added, "may well prove to be a costly mistake."

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Can a Decimal Point Change the World?

By Patrick Ward
Of the CW Staff

BOSTON – The "Limits to Growth" is a famous computer modeling study with a grim message. The model, by Dennis and Donella Meadows, then of MIT, projects a world unable to support the ever-heavier burden of human affluence, if world economic and population growth continues at the present rate. The earth's fertility can't keep up, pollution from expanding industry proves too much and society itself begins to crumble.

But Don't Panic Yet

Now, however, a McGill University professor has written that a misplaced decimal point in the model, conducted for the Club of Rome, influenced the direction of the whole report.

William J. Boyle, an associate professor of chemical engineering, contended that a misplaced decimal point in the Pollution Generation Multiplier from Output Section would cause the pollution index to take an exaggerated jump whenever the value of industrial output per capita reached a certain high level.

Boyle said he discovered the error while translating the programs from the original Dynamo language into Fortran for validation runs on an IBM 1130.

During this translation, Boyle found one point in a linear interpolation table was larger by a factor of 10 than those around it.

Pollution Control

By correcting the error and making no other changes, Boyle said, the model switches from predicting that rapid industrial growth will bring a pollution crisis before the year 2100 in spite of technological advance, and instead indicates that pollution will be controlled.

This still leaves the problems of food and industrial production, for which the corrected model indicates the world

Three Past DP Employees Indicted in Equity Case

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Three of the 22 individuals recently indicted in the Equity Funding Corp. scandal were former members of the data processing department.

William Mercado, 32, former director of management information systems (MIS), and Lester M. Keller, 32, programmer, were named along with 20 other defendants in a 105-count indictment handed down by the federal grand jury here.

William Gootnick, also a former director of MIS, was named as an unindicted coconspirator by the grand jury.

But Gootnick, as well as Mercado and Keller, was indicted in a separate action by the Dupage County grand jury in Illinois. Equity Life Insurance Co., a subsidiary of Equity Funding, is chartered in Illinois.

The Dupage grand jury charged 22 individuals with conspiracy to enter false information on the books of Equity Life in order to deceive the Illinois insurance director, who is in charge of regulating the state's life insurance companies.

Several Violations Alleged

The federal grand jury indictment charged all 22 individuals conspired to commit federal violations including securities fraud, mail fraud, filing of false documents and electronic eavesdropping.

Gootnick was MIS director from June 1971 until about June 1973, and the federal indictment said he supervised the writing of computer programs designed to conceal the existence of Equity Life's fictitious insurance business from auditors and state insurance examiners.

Gootnick allegedly made alterations in computer records at the behest of other Equity Life officials to conceal the true business and financial information of the company, according to the federal indictment.

Mercado, who was MIS director from about February 1970, until June 1972, was accused along with several other officials of arranging "to manipulate computer records containing detailed listings" of items relating to receivables.

Mercado was also alleged to have supervised the preparation of a computer printout of funded loan receivable accounts containing a total of accounts which was intentionally inflated.

Keller, it was alleged, "wrote a computer program for the creation of fictitious insurance policies having a total face amount of $430 million and a total yearly premium of about $5.5 million."

The indictment also alleged discussions by officials to create computer printouts of fictitious funded loan accounts.

The indictment said the computers were used to create data relating to fictitious insurance policies so they could be reinsured with other insurance companies.

Equity Life collected commissions on the sale of these policies and also collected money from death claims made on the fictitious policies.

Not Identical Indictments

Although the federal and Illinois grand juries each indicted 22 persons, the lists were not completely identical.

Gootnick's indictment by the Dupage grand jury also carried two counts of

(Continued on Page 4)

New Telephone Would Lock Out Some Couplers

By Ronald A. Frank
Of the CW Staff

NEWTON, Mass. – The Bell System may be introducing a new type of telephone that will not work with some types of inductively coupled non-carrier equipment, such as portable data terminals. At least one user has been unable to operate his terminal because of a new telephone.

Certain types of equipment which fall into the "acoustic coupler" category utilize an inductive coupling technique which detects the electromagnetic field that is generated as a "leakage" by product by the conventional telephone handset. This type of unit will apparently become noncompatible with the new telephone.

Officially, AT&T said there are no current plans to introduce new telephone equipment that would hamper any types of non-carrier inductively coupled devices. But several non-Bell sources said they had expected the new types of handsets to be announced some time ago.

One Midwest state regulatory commis-

(Continued on Page 2)

'Operations' Added

U.S. Caravan Under Way Feb. 20

By a CW Staff Writer

NEWTONVILLE, Mass. – The third U.S. Computer Caravan will get under way in February.

Even while the German Caravan is now at mid-point and the UK Caravan is history, plans are rapidly taking shape for the U.S. version of the traveling conference and trade show.

Sponsored by *Computerworld*, the three-day shows feature panel discussions and workshops conducted by and for computer users, plus a comprehensive exhibit.

Besides the user panels and workshops, known collectively as the computer users' forum, Richard A. Kuehn will talk on data communications on the middle day in each of the 10 cities visited by the show.

Kuehn, president of RAK Associates in Cleveland, is a data communications consultant whose chief clients are users rather than designers or vendors. His current emphasis is in on-line, real-time systems, especially with financial institutions, as well as facilities management of on-line systems at user sites.

The other user sessions will include panel discussions and workshops on source data automation, data communications and operations management. This last topic was added for 1974 as a result of several user recommendations.

Afternoon sessions also featuring user panel discussions without workshops will focus on personnel and data base management.

About 50 booths have been sold for the

(Continued on Page 4)

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New Phone Would Affect Data Couplers

(Continued from Page 1)

sion engineer said the new telephone handset was an electrostatic device that would no longer send out the type of field required by an electromagnetic inductive coupler.

"This is part of the changing technology and unfortunately you can't hold the telephone company to keep producing the same kind of sound off their telephone as Alexander Graham Bell had," the engineer said.

"AT&T is going to market in a few months an adapter device for people with hearing aids that can be clamped over the receiver on a telephone handset that will convert from an electrostatic to an electromagnetic signal. I don't know if that device will work with data terminals, but I doubt it."

The new type telephone is going into production, but up to now there have been no complaints from data users in his state, the regulatory engineer said.

"There is nothing in the tariff that says you have to give a customer an audio signal by electromagnetic means or electrostatic means," he said.

The new phone is called a "high gain telephone set" and is part of quite a few new Bell System changes, the state regulatory official said. "This is what we in the states have been arguing with the FCC about. They are allowing anybody to connect anything to the network. And if this equipment no longer works, our feeling is, 'well, tough fellow, it was accidental that you could piggy-back your stuff on the telephone network and if you can't piggy-back tomorrow, that's your tough luck – so get out.' "

'Clipping Effect'

An AT&T spokesman said some trouble with coupled devices could be expected with the use of "Trimline" telephones since they may produce a "clipping effect."

The spokesman added that some types of telephones no longer have magnetic leakage of the type required by inductively coupled equipment. He attributed this to a Bell System change from U-type to L-type conductors in certain phones, including new coin phones and Trimline sets.

One expert on coupled devices at a nationally known independent research organization said he had predicted that Bell would switch to a non-magnetic handset as early as 1967.

"There are probably well over 100 suppliers of couplers in this country and I would guess that about 25% of these [units] are still magnetically coupled," the source said. The 25% would apply to the total number of sets currently in use, he added.

Most of the larger suppliers use strictly acoustic couplers so any problems with inductive devices would most probably occur with smaller companies which produce inductive/magnetic couplers, the expert said.

"If the user has problems with a coupler that was sold to him as an acoustic device, then he can go back to the vendor and demand a refund because he actually received an inductive, or perhaps a combination of an acoustic and an inductive device," he said. "But if the vendor sold you a unit on the basis that it was simply a data coupler, then you are holding the short straw.

"Those users who have a data coupler that is not acoustic on the pickup side are out of the game when they run into either a ceramic earpiece or an electret-type earpiece," he said.

An electret is a ceramic capacitor (or sometimes a plastic capacitor) that has a permanent electric charge worked into it at the time of manufacture, the expert explained.

There is another type of device, Piezo-electric types, with no permanent voltage built into it. But from the viewpoint of a data coupler user it would create the same type of problem since there is no magnetic field either, he said.

Thus far, only one case has appeared in which a user of an acoustically coupled portable data terminal was unable to use the terminal. The local East Coast Bell System company had recently installed a new phone at the site, and when the user contacted the local Bell engineering office he was told the handset of the telephone contained a "filter coil" which made it impossible to use his coupler.

The Bell engineer told the user that his operating company had begun installing the new phones on Sept. 1 and that compatibility problems with coupled equipment had been expected. When asked to recommend a solution, the Bell engineer suggested that the portable terminal be hardwired to the phone network using a Bell Data Access Arrangement.

An AT&T spokesman said the Bell engineer may have had incomplete information and should have put the customer in touch with Bell Datec data specialists.

Just a Decimal Point Away?

(Continued from Page 1)

demand will have gone beyond resources by the year 2100.

Using alternative, non-restrictive social policies in the modeling program, Boyle said the corrected program can indicate a world before 2100 that has achieved "a growth-limited situation corresponding to widespread affluence.

"In the end, it's always the pollution crisis that kills the whole thing," Boyle said of the report, "but the point is that it was only a pollution crisis because of this numerical error and there wasn't really a pollution crisis in those runs."

With this in mind, Boyle thinks that improved technology and a trend toward individual and societal self-regulation can make affluence attainable.

The Meadows team agrees there was an error but denies the error was responsible for the conclusions reached.

In a written response to Boyle, the Meadows claimed the mistyped number corresponds to a value of industrial output per capita of $1,000 and will cause an error in the model whenever the value of industrial output per capita ranges between $800 and $1,200.

But that situation occurs only in three of the 12 model runs shown in "Limits to Growth," they maintained. In the other nine runs, they claimed, the industrial output per capita remains below the region where the error would effect results, and so their conclusions are valid.

Boyle has said he does not think it is possible with the state of the art to get world modelling programs that could make credible predictions, simply because the modelers "could not establish unarguable parameters for a long, long time."

But the Meadows noted their model is not aimed at the future. Rather, their model simply indicated "the present global population-capital system is dynamically unstable."

The Meadows observed that their basic assumptions in their model were that population and capital tend to grow exponentially; the amount added to either population or capital each year is partially determined by the amount of population or capital already present.

There are limits to the growth of any physical quantity on a finite earth. Better technology can increase the earth's carrying capacity for human population and industry but misuse, erosion and depletion of resources can diminish it.

There are delays in the feedback processes that act to keep population and capital within global capacity.

A combination of rapid growth and long feedback delays can lead to a temporary overshoot of the earth's carrying capacity, and during this overshoot period the carrying capacity can be eroded by overuse. This can lead to a decline in population and industry, the Meadows believe.

Like Boyle, the Meadows stated that improved technology can improve the quality of life in a stabilized state, but they warned that improved technology can be dangerous by speeding growth and masking the feedback of physical limits. Social problems ultimately require social solutions and not technological ones, they concluded.

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Security of Aussie Data Banks Advances Under Health Program

By Marguerite Zientars
Of the CW Staff

CANBERRA, Australia – Serious legal measures for the security of computerized date banks are being initiated in Austrelie, the result of e new computerized health insurance system, eccording to *Computer Weekly*, an Australian newspeper.

Political pressure through the Australien Medical Association eppears likely to achieve legislation that the computer professionels have long been trying to bring about.

Minister for Social Security Bill Hayden ennounced e special study on weys to guarantee confidentiality of medical records, "firm safeguards" to be built into legislation covering the new health plan and creation of a separate communications network to service the scheme.

Features of the health insurance system include storage of medical records solely in magnetic form and accessible only by number, the number being stored on a separeta computerized index. Cleims would not reveal e patient's name.

The general question of individual privacy was already the subject of e special advisory group being formed by the attorney general.

The health plan legislation would include creetion of e statutory corporation which would have legal obligation to preserve privacy of information about individuels, he said.

The privacy aspect of the health plan, while acknowledged balatedly by both the AMA and the Social Security Depertment, may possibly produce far broader effects if safeguards have to be implemented by all Australian computerized data benks.

Massive governmental and private data benks have been built up in recent years, according to e spokesman, without eny significant legislation being applied to ensure their proper use.

DP Salaries Within Guides

By Toni Wiseman
Of the CW Staff

LAKE BLUFF, Ill. – The 1972-73 increase in average salaries paid the verious catagories of DP employees countrywide appeers to be well within the government's 5.5% wage guidelines.

This is the finding of e survey conducted by Philip H. Weber Salary Administration Services, covering over 93,000 DP employees in 1,265 installations.

The survey indicetad e 5.1% increase for computar programmers, 4.4% for systems analysts and 5.6% for computer operetors. The average salary increase for kaypuneh operators was 2.8%.

"For the last thrae years the management group hea been going et a 9% increase clip," said Robert Graena, of Webber. Ha attributed the lerge increasa as baing partially a funetion of cantrelization, stating that top EDP personnel are tending to becoma higher-level exaeutives, raporting only to the top echelons of management.

Commenting on the low salary increaaaa for keypunch operators, Greene said many installations are phasing out keypunch operators per se with tha edvent of telecommunications and direct entry.

"Installations are going to remote inquiry and key-to-disk," he said. "As a result they are promoting key operators to more comprehensiva jobs including verifying and checking entries. Kaypunch operators who do not want the added responsibility are often being let go."

In a similar vain, Greene noted computar operators are elso taking on added responsibilities, accounting for the 5.6% salary increase indicated by the survey.

"With tha eppearance of tha 370, and ever since OS has ceught on, installations have been going to multiprocessing rather than batching," he said, "and tha opereting and of the DP function has become mora than button-pushing."

Privacy Problems Plague Carpool Plan

CW West Coast Bureau

LOS ANGELES – A computerized carpool system established by this city successfully matched 1,700 persons in the first week of operation but it also created a confidentiality problem for police officers.

The confidentiality issue was raised by the Los Angeles Police Protective League which objected to the lists of officers' addresses on computer printouts, which were posted in some city buildings.

S.E. Rowe, senior traffic engineer, said the problem was resolved by removing the addresses from the public listings but leaving them on smaller lists sent to individuals who want to contact potential riders in their neighborhoods.

The system operates on the city Data Service Bureau IBM 370/155 with programming from the Federal Highway Administration and the city Traffic Department to match city employees according to residence and destination.

S.E. Rowe, senior traffic engineer, said the goal is to reduce traffic volume in downtown Los Angeles created by city employees by 20% by increasing the occupancy ratio per car from 1.2 to 1.5.

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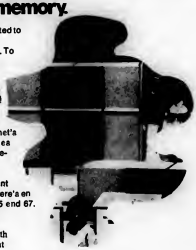

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MCI Hauls AT&T Into U.S. Court

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – MCI Telecommunications Corp. has gone into federal court in an attempt to force AT&T to provide facilities to MCI's customers.

MCI is seeking a preliminary injunction in the U.S. district court for the eastern district of Pennsylvania requiring the Bell System and AT&T to provide local loops necessary for MCI to begin service.

In a letter to stockholders, MCI said it had commenced actions under the Communications Act of 1934 and will seek an order "that will require AT&T and its Bell System companies to furnish us promptly with the full range of interconnection services . . . we require in order to provide our customers with the MCI services authorized by the FCC."

In a similar letter to customers and prospective customers, MCI said, "AT&T has instructed the local telephone companies it controls to refuse to provide you with certain connection arrangements and thereby [AT&T] has limited the types of service you can acquire from carriers such as MCI."

The letters explaining MCI's position were signed by William G. McGowan, chairman of the board, who said the "reactionary policies [of AT&T] originate with a relatively small group of AT&T corporate executives, and in many cases do not represent the business philosophy . . . of many Bell telephone company managers."

In a statement issued after the MCI court action, AT&T said: "None of the FCC's decisions require us to permit the specialized common carriers to participate in furnishing Bell System basic services. To do so would mean an enforced sharing of Bell System responsibility for good service.

"We are making and have made every reasonable effort to cooperate with the specialized carriers by providing them with local distribution facilities under leasing agreements. We will continue to do so pending implementation of recently filed tariffs in all jurisdictions served by the Bell System."

The MCI court suit was filed after Pennsylvania Bell told MCI it could not provide local loops until a state regulatory body had ruled on new tariff requests. The FCC has said the local loop facilities are part of MCI's interstate service and therefore do not fall under the jurisdiction of state regulatory commissions.

A hearing on the MCI court action will be held in Philadelphia Nov. 15 before federal Judge C. Newcomer.

In a related move, MCI asked the FCC to require that the FCC's fairness doctrine be applied to AT&T advertising. The Bell anti-competition ads are being funded by the public and therefore should present both the AT&T and non-AT&T positions, MCI said.

Oct. 7, 1974 is Justice/IBM Day

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Oct. 7, 1974, is D-Day for the government's mammoth antitrust suit against IBM.

"I expect this trial will commence on the first Monday in October next year," Judge David N. Edelstein told lawyers from the government and IBM in a pretrial conference here last week.

And the judge made it very clear he would not allow any delay in that trial date "except for very unusual circumstances." He also warned the parties he would censure them for any "capricious" pretrial delaying tactics.

The trial, the parties agreed, would be a long one. The judge and the government estimated it would take around 60 days or 12 weeks, but IBM indicated the trial could last as long as a year as has been predicted by some outside sources.

The judge noted many people have said the government-IBM case was too big for the U.S. court system to handle, but he declared they would be proven wrong.

"We are going to prove this case is not too big and too unmanageable to handle," he said.

This proof that the U.S. court system could handle any size case, he claimed, might be the most important outcome of the case – even more important than the final judgment itself.

The early October date for the start of the trial is somewhat of a victory for the government, which had indicated it would be ready to go to trial at the end of next September, while IBM had argued for a trial starting date several months later.

In fact, IBM had argued that the judge should not set a date at this time because of the amount of pretrial work still to be completed in the case, which both parties agreed is "the biggest and most complex antitrust litigation which has ever been brought into the court system."

Three Indicted in Equity Case

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filing false annual statements, which are required by Illinois.

The federal grand jury indictment also cited several other persons, some of them actuaries and some insurance personnel, who allegedly manipulated computer records to show falsely that 5,000 lapsed policies were in force.

The fraud, which began in January 1965, was intended to inflate assets and raise cash, according to the indictment.

A key goal of the entire scheme, it alleged, was inflation of Equity Funding's stock price.

By driving up the price of the company's shares, Equity Funding could acquire solid insurance companies and branch out into far-flung financial ventures, the indictment said.

When the scheme was exposed last April, Equity Funding collapsed into bankruptcy and thousands of investors were left holding apparently worthless stock.

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U.S. Caravan Under Way Feb. 20

show, according to Neal Wilder, CW vice-president, marketing. This puts the Caravan's sales about two months ahead of 1973's progress, he added.

'Call for Participation'

Edward J. Bride, CW's editor, who will again serve as forum director, said several users have already been designated for panel slots.

The forum is an editorial department project, he noted, since the contacts developed by CW staffers over the years are often anxious to share knowledge with their colleagues, but traditionally have lacked an arena.

Users interested in participating as panel members and/or workshop leaders should contact Bride at CW. About 20 users are involved in each city, he noted.

Besides the all-user sessions, Kuehn will speak for about an hour on near-term data communications projections, both regarding equipment and data transmission facilities.

He will also address a topic for which he is particularly noted – the role of a data communications specialist in the DP environment, and the role of a DP manager in a company with telecommunications facilities.

Kuehn has spoken at several major user meetings, including the International Communications Association and the Bank Administration Institute. He also conducts data communications seminars for the American Management Association.

CW also cosponsors the European Computer Caravan, including the recent UK tour, the current German show and next spring's French Caravan. In each instance, leading computer publications from the pertinent markets are partners.

The Caravan will begin in the U.S. Feb. 20, in Washington, D.C., then visit, in order, Cincinnati, Houston, Anaheim, San Francisco, St. Louis, Chicago, Boston, Charlotte, N.C., and New York.

Hooky Days Over?

SCOTTSDALE, Ariz. – Playing hooky here may soon join swallowing goldfish in the annals of school folklore, as a computer takes over the role of truant officer.

Next year local schools will use a computer to tabulate each absence by pupil, course, teacher and time of day, in an attempt to rehabilitate minor offenders or refer youths with more serious problems to outside professionals.

The computerized attendance system was piloted at two high schools for nine weeks last year, and absenteeism dropped by 50%, according to Dr. Phil Gates, director of secondary education.

Formerly, absences were registered by clerks.

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'Information Utility' of the Future?

Students Design Ideal Home Computer...on Paper

By Marguerite Zientara
Of the CW Staff

CLAREMONT, Calif. – The home computer of the future may have come a small step closer to reality last spring in a freshman engineering class at Harvey Mudd College here.

Eight students worked on a project to study the feasibility of a household computer system, or "information utility."

The project, still totally on paper, was originally set forth to design a system capable of preparing income tax returns for an individual user. Under the project's scenario of a corporate committee studying the problem, the group "immediately realized" that a machine that could do income tax returns could also do much more, according to Bruce Bidlack, one of the eight students.

The group found and reported that the system would be capable of:

- Household business – checkbook balancing in addition to income tax.
- Computation – simple calculations.
- Education – arithmetic, language and vocabulary drills.
- Recreation – television-oriented games as well as more sophisticated games.
- Editing – letter and computer program editing.

In view of these capabilities, the students put forth certain objectives and constraints they felt the system should meet.

The system must not cost more than $30/mo, the report said. This is $360/yr plus a $20 installation charge, and would be treated as a utility. The fee is less than half what the average upper-income family spent in 1972 on recreational and educational materials alone, the group found.

The system must be simple enough for someone with no computer experience to use. To this end, the terminal would have a keyboard similar to that of a standard typewriter, with only a few strange characters, and would use a simple programming language like Basic or PL/1.

The system must be at least as reliable as a television. This was deemed important because "there is nothing which will disillusion a person faster than a utility that he is paying money for that doesn't work a lot of the time," the students said.

The system must be upwardly mobile. It must be able to change as both the technology changes and as user demands change. As users find additional uses for the system, these could be added at relatively low cost, they noted.

The group felt the system should be a "humanizing" machine in an effort to improve the poor reputation computers have attained for themselves in the eyes of the average person. "They print out his traffic tickets and send him bills for things that he never bought," the report said.

The user should not feel threatened by the machine, but ideally should come to feel as he does toward the automobile (which he sees as allowing him to extend himself) and the television (the entertaining qualities of which overshadow the fact that it is a complex machine). Thus, the system should not openly be called a "computer system."

The final proposed system based on the above criteria involved a three-part access system:

- The calculator mode. The terminal would contain in itself a four-function calculator capable of operating independently of the rest of the system. Thus, there would always be a part of the system available for instant use.
- The program mode. This would involve calling up the computer center and logging in. This mode would enable the user to write simple programs and allow the user access to the system programs that don't require a large machine to perform. Examples include the checkbook balancing routine, the editor and the user programmable mode.
- The large program mode. This mode would enable the user to access the large computer for running such system programs as the income tax program. This is a very limited access mode.

The four physical parts of the proposed system are the terminal, the phone line concentrator, the small computer and the large computer.

The terminal, as the only visible part of the system, should be as "humanizing" as possible, according to the report. Economically and psychologically, the television should be the output device, being the most inexpensive and familiar to users.

The large computer, since it would be used only once a year, for income tax purposes, would be rented from a time-sharing vendor, according to the report.

As possible positive effects of the widespread use of household computer systems, the report cited:

- The reduction of drudgery in calculations, resulting in more time for "creative or more productive processes." In the case of the income tax returns, since data would be compiled all year, there would be less chance of forgetting something and it would be harder to "fudge" the returns, since the user would not do the actual calculations.
- "The presence of a computer system in the home would dispel the illusion that computers are inhuman, dangerous monsters."
- The data retrieval system with much stored material could be a direct competitor to television, with no commercials. Educational games and drills output on the screen in an enjoyable manner would lead to increased skills in the young.
- Mass storage of what is presently the printed word would reduce the amount of paper used each year.

Seen as disadvantages of the system are loss of what are generally considered basic skills, such as arithmetic which would be done by computer, and altering the values of society – the system would offer people the chance and reasons to use the system "every free second of the day."

The report concluded, "If [man] uses it as a tool and does not become a slave to it, mankind's life and existence will be enhanced."

The 45-page report describing the system includes basic diagrams of the system, technical discussions of the system's hardware and a discussion of financial considerations covering a seven-year period.

At present, the students have no plans for building or marketing the system.

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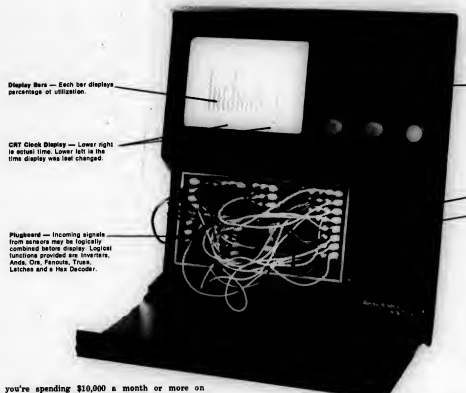

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To What Do We Owe This Healthy Neck?

ANN ARBOR, Mich. – The University of Michigan's Highway Safety Research Institute (HSRI) has been measuring, testing and computerizing information about necks in order to study body measurements and how they relate to head and neck injuries.

"Our overall objective is to identify and measure certain basic characteristics of the normal, healthy neck," said David Foust, a graduate research assistant.

In 1972, the HSRI studied 971 car-related injuries. Of those, 114 were neck injuries, mostly of the "whiplash" variety.

The study, according to Richard G. Snyder of HSRI, is not intended to find a cure for whiplash injuries, but rather is intended for use by automotive engineers to design safer seats and headrests.

The study involved the computerization of X-rays, multiple physical measurements, reflex and strength measurements, and statistics on sex, age and body stature.

Analysis of the data, which has been collected for several years, has revealed, among other facts, that tall people tend to have stronger necks than short people, and women's necks tend to become gradually weaker at an even rate while men's necks are strongest in middle age and then decline rapidly after middle age.

College Compiles Employer Data

NEW YORK – A pilot research program to establish a computerized, in-depth data bank on specific personnel requirements of over 1,200 Manhattan businesses and institutions will be launched by the Borough of Manhattan Community College.

Information from the data bank will be used by the college in its cooperative Education Program which secures on-the-job training opportunities for students who work in local businesses while studying at the college.

The data gathered on each surveyed organization will include: a breakdown of jobs by 115 occupational titles, educational attainment requirements for the various positions, availability of on-the-job training, estimated annual hiring by occupational title and other pertinent information.

Bothered by Traffic? Direct Cars to Oeland

STOCKHOLM, Sweden – Where, oh where have 400,000 cars gone?

Computer printouts of traffic flow on a new bridge connecting the mainland with the island of Oeland showed three million cars crossing over to the island this year, but only 2.6 million returned, according to the computer's figures.

"Our measuring equipment must be wrong," a board spokesman concluded.

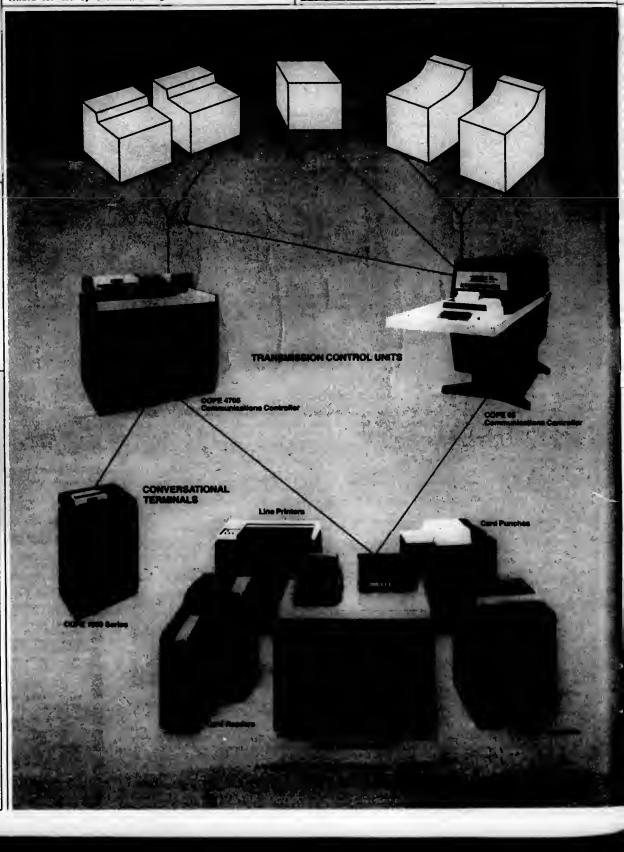
DPers Blast Soviet Curbs

WASHINGTON, D.C. – Several prominent members of the computer science community have sent a letter to President Nixon and Premier Brezhnev to express their "concern . . . over the immense difficulties and hardships imposed by the Soviet government on the right of scientists and academicians to leave the USSR and travel abroad."

Dr. Anthony Ralston, president of the Association for Computing Machinery, three ACM past presidents and two former presidents of the American Federation of Information Processing Societies also signed the letter.

"The USSR has taken a wide range of punitive sanctions against scientists who have applied to emigrate . . . ," the letter stated. "We are alarmed at the USSR policy that undercuts the international character of science which presupposes the free flow of people and ideas. Science belongs to all people throughout the world."

The 13 signatories asked the persons addressed to do everything they could "to correct this situation of importance to the furtherance of science and human rights . . . "



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Blind UK Programmers Get $600 in Free Equipment

By Joseph Hanlon
Special to Computerworld

READING, England – Much is being done in Britain to make it easier for blind computer programmers to practice their trade, including free equipment from the government and continuing research into new devices for reading and writing.

The Department of Employment now gives blind programmers, on permanent loan at no charge, five pieces of equipment worth $600: a typewriter for writing coding sheets which has special characters unique to the programming languages used; an adapted version of the IBM port-a-punch for reading cards, where the blind programmer runs a stylus over the punched card; a "talking book machine" (a special tape recorder which reads out index codes when played fast forward); a Perkins "brailler"; and a pocket tape recorder.

This equipment is given to Britain's approximately 90 blind programmers, 60 of whom are members of the British Computer Association of the Blind (BCAB). BCAB holds regular seminars, publishes a newsletter every six weeks and issues recordings of materials from the regular DP press.

Support Is Poor

Reading is one of the biggest problems for blind programmers, according to BCAB chairman Phil Coleman. Less than one percent of the computer literature is available in Braille, and the Royal National Institute for the Blind "has failed miserably" to support blind programmers with literature, Coleman said. The problem is compounded by the fact that one of the biggest sources of literature – programmers' own output – cannot be easily "brailled."

However, new and experimental equipment currently being developed may help to ease some of these technical problems. At a recent meeting here, several new devices were shown; among them was a prototype of an improved card reader.

The device is a wooden box with a set of 12 vibrators and 12 phototransistors and amplifiers.

A light is put over the box and the card is moved by hand until one column is over the photosensors. The light then activates the appropriate vibrators. The unit can be used quickly with one hand moving the card and the other "reading" the vibrators.

Another device displayed was the Opticon, developed by a Stanford Research Institute scientist to help his blind daughter. It has a hand-held photosensor and a six by 24 array of small vibrators that can be covered by two fingers. Letters are converted not into Braille, but directly into a vibrating pattern; the blind person touches, not Braille dots, but the actual shape of the letter.

This device has been less well-received than it might because reading is quite slow – the average is 40 word/min and the maximum, 90, about one-third the speed of Braille reading.

But Coleman noted that in programming the need is for accuracy and not speed, so the Opticon is highly suitable. Programmers in the U.S. who have tried the device find they use it, on average, three hours per day.

Telesensory Systems of Palo Alto, Calif., has sold 300 of the units for $3,500 each. Coleman is pushing to have Opticon included on the list of equipment given to blind programmers.

Other devices now being tested which might aid blind programmers, and which were displayed at the meeting are: a device which displays 25 Braille characters by raising and lowering a set of pins (Braille is a six-bit binary code), and which will read magnetic tape, making it possible to store Braille books in very little space; a variable-speed tape recorder which permits tapes to be played at one-and-a-half times normal speed; and a calculator which gives the answer as a series of long and short sounds representing numbers.

DP 'Grapples' With ICs

OTTAWA, Ont. – An interactive computer graphics language, Grapple, has been developed by researchers at the Bell-Northern Research laboratory here to aid in the design of integrated circuits.

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Editorial

Guide Perspectives

There were 3,500 attendees at last week's Boston Guide meeting. Mid-morning time slots were occupied by as many as 53 parellel working groups, committees and open sessions. There wes vigorous campaigning for office, vigorous support for Guide 37.5, 38, 38.5 and 39 – four meetings a year, two regular and two interstitiel.

Contrast this with en ennual ACM meeting: ebout one-third the attendance, one-quarter as meny simultaneous sessions, and far less enthusiasm; either Guide is doing somathing awfully good (which is not obvious from outside), ACM is doing something wrong (highly probable, but whet?) or the participants are drawn from very different populations.

Tha latter possibility intrigues us. There appeers to be a lerge group concerned with deta processing, or at least employed in DP installations, who want more technicel "action" than DPMA effords, but more practical application than ACM's Algol and algorithms.

Guide does not plan to disband. It intends to go on through tha 1976 IBM announcements; after all, there will be 360s and 370s at work well into the Eighties, just as there are Guide installations still plugging away on 1401s (end 705s?) today. And since the massive, expensive organizational framework is also in place, and IBM support is elso essured, why not engulf the FS customers as wall?

If our open professional organizations are to prosper, they must draw on the enthusiasm and the installation support the successful user groups have in such great measure. This can be dons only if those organizetions come together in something like the British Computer Society; Afips, without DPMA, and with a foreground concarn for the Netional Conference, is not enough.

Letters to the Editor

Most Successful People Failed Many Times

Re "Manage Your Own Career by First Setting Goals," by Frank Greenwood [CW, Oct. 31]:

In my 25 plus years of working, I have seen many talented people over and over again just get "nowhere" in their careers by not being interested in the "long run." Most are far too concerned with immediate, short-term objectives that get them so totally involved that they never look up and say "Quo Vadis?" The result is that after many years of effort on their part, they never seem to get anywhere. They have no goals at all.

As the article said, "people are everything," and "confidence is the most essential element for success." Most people seem to lack the confidence to take advantage fully of their potential, perhaps because of fear of failure.

Most successful people have made many mistakes and failed many times; they just get up, make a new plan and try again. Finally, they succeed, or as Napoleon once replied when asked what is the most important battle, "the last one, of course."

There are many people right now with terrific ideas who are too timid or afraid to come forward, or too busy with meaningless day-to-day details to take time to plan out what to do and how.

If this article convinces only one to try, who knows what the results could be?

W.A. Delaney, President
Analysis & Computer Systems, Inc.
Burlington, Mass.

The DP Shortage...Old Habits and New Hangups – Part III

Tried, True Rewards Must Be Available When Earned

By Brooke W. Boering
Special to Computerworld

Accept the need to reward appropriately exceptional technical competence.

What has been said immediately prior to this applies equally to this positive assertion. Additionally, rewards can and should be provided in various indirect ways. Broadening of responsibility (not necessarily managerial in nature) can reflect proper appreciation of the growing competence of the valued producer.

Opportunities to expand professionally via seminar attendance is another obvious carrot. Participation in project planning and periodic "briefings" contribute to the sense of belonging and being appreciated. While there is nothing really new in the foregoing, what is stressed here is that these tried and true rewards must be made available where and when earned.

Stop judging technical professionals on the basis of managerial potential.

Certainly not all competent people are cut out to be managers, nor do they have any real desire for such work. In fact, the better they are technically, the less likely that they long for the often irrational responsibilities the manager must face daily.

What they do want is the recognition and compensation which is ordinarily reserved for management status.

Recognition is the key word and we must find a way to provide it without artificially pointing people down the management path when they may be considerably more valuable elsewhere.

Concede the concept of the "computer professional" who is not organizationally oriented.

We complain about so-and-so not being "loyal" or that he is dedicated only to his field while his employer must accept second place. Okay, so what; why fight it?

As managers, what we're supposed to be after is results, and it's well known that the pros are the real producers. Should a doctor be more dedicated to the hospital than to medicine? Must a social worker be "loyal" to the city government rather than concerned for her wards? If we wish to attract and retain the loyalty of the computer professional, we have got to provide an environment in which he can grow and achieve, and feel appreciated. Perhaps more than anything else such an approach will accomplish our avowed aims of low turnover, high productivity and projects completed on schedule.

Brooke Boering is assistant vice-president, Talman Federal Savings and Loan Association, Chicago.

Far too much has been spoken and written about the computer personnel shortage, a subject on which there exists little real expertise.

At issue are old habits and new hangups, a few cliches and some meaningless witticisms, a problem that bedevils our field, seemingly unsolvable in a profession that professes to solve the world's problems. Dare we face the issues squarely?

To Russia...but Slowly

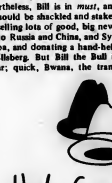
Old Bull Elephant Norris is on the rampage again. Throwing teak logs about like matchsticks, Bill, in one of his beastlier moments, is an awesome sight. To think that only two decades ago he was suckling peacefully on the military-industrial teat – but that was in gentler times, when bombs came only in kilotons and IBM did a paltry billion or so a year in sales!

The poor natives he is terrorizing live in a compound called "Export Control." Every day Bwana DOD sends down orders saying, "Keep America safe: say 'No' to everything!" Life in the compound could be so easy, so quiet; the Honeywell elephant and the Burroughs elephant and the National Cash elephant and the Univac elephant are tame and manageable, and the huge IBM squad, a dozen humbos trained to work together, has long since disappeared into the trees on the other side of the river.

But here is Bill the Bull, raging around, threatening to give away the secret of the supercomputer (the secret is that it doesn't work – but Bill has something else in mind!). He also plans to ship Tom Kamp to Minsk, or in some other way wire the Soviets up on how to build peripherals. And, having acquired the Service Bureau Corporation in exchange for an inexpensive data base index, he no longer needs the *mahouts* at the CDC Computer Institute and plans to trade them for their weight in slightly polluted Caspian caviar.

Obviously the saving factor for Bwana DOD is that Kissinger's Moscow buddies are so far behind they won't even be able to copy Singer POS equipment, let alone make the Star-100 work. Soviet efforts to work with CDC in developing a system more powerful than the Star, or with IBM in developing a Trans-Siberian Arpa net, ought to set Communism back enough to revenge us amply for the wheat deal.

Nevertheless, Bill is in *must*, and probably should be shackled and staked out. I favor selling lots of good, big new equipment to Russia and China, and System/3s to Cuba, and donating a hand-held HP to Dan Ellsberg. But Bill the Bull is going too far; quick, Bwana, the tranquilizer gun!



Proper appreciation is the growing competence of the valued producer.

Opportunities to expand professionally via seminar attendance is another obvious carrot.

Participation in project planning and periodic "briefings" contribute to the sense of belonging and being appreciated.

While there is nothing really new in the foregoing, what is stressed here is that these tried and true rewards must be made available where and when earned.

Stop judging technical professionals on the basis of managerial potential.

Certainly not all competent people are cut out to be managers, nor do they have any real desire for such work. In fact, the better they are technically, the less likely that they long for the often irrational responsibilities the manager must face daily.

What they do want is the recognition and compensation which is ordinarily reserved for management status.

Recognition is the key word and we must find a way to provide it without artificially pointing people down the management path when they may be considerably more valuable elsewhere.

Concede the concept of the "computer professional" who is not organizationally oriented.

We complain about so-and-so not being "loyal" or that he is dedicated only to his field while his employer must accept second place. Okay, so what; why fight it?

As managers, what we're supposed to be after is results, and it's well known that the pros are the real producers. Should a doctor be more dedicated to the hospital than to medicine? Must a social worker be "loyal" to the city government rather than concerned for her wards? If we wish to attract and retain the loyalty of the computer professional, we have got to provide an environment in which he can grow and achieve, and feel appreciated. Perhaps more than anything else such an approach will accomplish our avowed aims of low turnover, high productivity and projects completed on schedule.

Brooke Boering is assistant vice-president, Talman Federal Savings and Loan Association, Chicago.

Experimental Systems Give Hope

One Day, Hardware May Catch Up With Software

By Jerome Niebaum
Special to Computerworld

For several years designers of computer hardware have brainwashed the software people to believe that a "gap" exists between state-of-the-art hardware and software.

The alleged gap arose, it is postulated, out of the superiority of the hardware design or the inferiority of the software, or a combination of the two. A large segment of those who engage in software design has apparently accepted the premise that a gap exists and has assumed full guilt for its existence.

In an attempt to close the mythical gap, software designers have resorted to inventions such as assemblers, compilers, interpreters and operating systems.

In an attempt to close the mythical gap software designers have resorted to inventions such as assemblers, compilers, interpreters and operating systems. Each was necessary to make up for deficiencies in the hardware. In short, the hardware did not do what the software people needed, but with considerable difficulty it could be trained.

How long will the software specialists labor to build their gigantic pyramids without asking who is going to be buried in them?

Creation of Acronyms

At a meeting of IBM users (Share XL in Denver) two sessions were held with the mysterious title, "VS2 Internals." The sessions were well-attended and the presenters were competent and well-prepared. Furthermore, there seemed to be a common goal of listeners and presenters: the creation of acronyms. For those not familiar with acronym creation the algorithm is fairly simple:

- Generate a random sequence of not more than six characters.
- Find or invent computing terms which can be associated with the character sequence generated.
- Persuade others to use the acronym regularly.

A related activity is control block creation which is usually followed by acronym creation.

This attendee of the Share meeting, at least, is convinced that VS2 is a creation that would put Dr. Frankenstein to shame and that its "Internals" must surely have been gotten from numerous dead bodies.

If it is necessary for the operating system to be that complex, then the system must be suffering from hardware deficiency anemia. Perhaps if one examines VS2 closely be will find in its "Internals" a circularity pointer which serves no useful purpose, but, after "n" levels of indirection, eventually points to itself.

I feel that virtual systems can only be maintained by virtual programmers and that most programmers have long since lost their virtue with other operating systems. VS2 is by no means an isolated example of technical insanity.

Consider, too, the panacea of teleprocessing, TSO (acronym for Time Sharing Option). Ponder for a moment trying to perform 2 + 2 in interactive Basic running under a TSO monitor in a VS2 environment and the complexity boggles the mind. Such a system may indeed approach the long-sought goal of 100% CPU time for system overhead.

It is past time to explode the myth and ask, "What have the hardware guys done for me lately?" After such a scathing attack it would be inappropriate for me not to offer some suggestions for possible improvement.

First, hardware designers should recognize that performance evaluation measurement and debug aids are not "add-on" features.

There exists at least one installation using oscilloscopes to display memory activity during program execution. Points of light of relative intensities reflect activity. Such a system can represent at a glance system versus problem program execution times.

Experimental systems such as these offer the systems programmer a glimpse of hope that indeed one day the hardware may catch up with software needs.

Furthermore, it can point out relative efficiencies/deficiencies of the operating system. Some manufacturers have elaborate system measurement devices for their systems. However, marketing strategies seem to keep these devices away from systems programmers. For about 50 cents and 10 minutes of installation time, a meter can be added to a popular minicomputer to show percent of time taken in interrupt service routines. This simple device can give systems programmers dynamic information for throughput analysis.

Hardware-assisted debugging is almost non-existent (curse you, hex dump). For starters one can envision a Trace command which would monitor a specific location or register for any change in contents. The contents could be dumped to specified memory locations each time a change occurred. Systems programmers should have little difficulty expanding the list to scores of desirable debug aids.

A system which for the first time offers the systems programmer a great deal of hardware assistance is Symbol IIR[1]. Language translation is done by hardware. Memory management is done by hardware. Operating systems can be coded in a high-level language on two pages or less.

Experimental systems such as these offer the systems programmer a glimpse of hope that indeed one day the hardware may catch up with software needs.

[1] Rice, R. and Smith, W. R. Symbol – A major departure from the classic software-dominated von Neumann computing systems. Afips Spring Joint Computer Conference Proceedings 1971: 575-587.

Jerome Niebaum is assistant professor and remote computing coordinator at Iowa State University.

Letters to the Editor

Joys of Emulation Are Only Temporary

After reading the "Horrors of Emulation" responses from readers in the Sept. 12 issue, I have decided to provide some input, and in so doing I have chosen to straddle both sides of the argument.

While the B1700 is no doubt designed for more sophisticated utilization, the inclusion of an emulation facility recognizes a very practical reality. Many users continue to operate 1401 programs for various reasons and are not about to scrap these. Burroughs is simply acknowledging this fact.

However, having experienced both emulation and conversion situations I would like to make the following points:

- While 1401 systems (programs) may be effective cost/performance-wise, they probably can be made more effective systems-wise (why perform an ineffectual function efficiently?). Ineffective business system design (a whole other subject) has been the source of more DP problems than anything else.
- As pointed out succinctly by Ron Stewart in his letter, "It is often easier to rewrite 1401-size programs" in a native mode than to translate them. If this can be accomplished so easily, then it behooves the user to do so, following existing system reevaluation and probable redesign.
- The 1401 is obsolete technologically; therefore, why continue to encourage use of this facility?
- Straight conversions, by my observation, result in wasted time because system redesign invariably takes place shortly thereafter, obsoleting the conversion activity.

More importantly, I don't believe there ever has been a case for straight conversion. There is no program so good that it can be improved upon the second time around.

Provided you can convince your users to emulate only as a temporary measure, Burroughs, then your emulation feature is an excellent marketing ploy.

Robert W. Liley
Manager
General Foods, Limited
Toronto, Ontario

Code of Ethics Must for Consultants

Donald J. Kenney must be a salesman. His article, ". . . When ACM's Code of Ethics Caused 'Black Decade,' " [CW, Oct. 17] shows the fear of someone trying to convince a customer that his product or service is best, not someone responsible for designing and implementing automated systems.

I can agree that a salesman should not be held to a code of professional ethics. But then other professions (such as lawyers, doctors and CPAs) do not hold their fellow professionals to all parts of their codes if they sell rather than practice their profession.

An exemption for salesmen, however, does not negate the need for a code of ethics for practitioners and consultants. It is of utmost importance that the integrity of these professionals be above reproach if their services are to contribute to the welfare of their clients and employers and the general public.

Joseph A. Leubitz
CPA, CDP
No Address

Pass Privacy Board!

I am pleased to note the introduction of legislation to establish a Federal Privacy Board [CW, Oct. 17]. This legislation, introduced by Rep. Koch, closely follows points laid out in Acpa's privacy policy first published in September 1972.

If this legislation is enacted, as outlined in Koch's news release, a giant step will have been taken toward protecting the privacy of U.S. citizens.

Acpa will be glad to furnish a copy of these bills to anyone who requests one. Acpa looks forward to hearing the DP profession's opinions and comments on this legislation.

Drew Farrell
Chairman, Privacy Committee
Association of Computer Programmers and Analysts
Kensington, Md.

Attitude at Fault

I'd like to applaud Alan Taylor for his columns on the arrogance of institutions. Certainly, it isn't only programming that's at fault. It's the attitude of the individuals behind the program, right on up to top management.

Recently in a letter to the branch manager of a bank, I complained about the service I was getting (mainly, it had to do with the "throughput" of customers in peak hours).

I made four suggestions which I felt might improve the service at this particular branch. I got a long reply which, boiled down, said: "We do things this way because this is the proven way of doing them. We do them this way because this is the way they *should* be done."

The letter also spent time and many words explaining to me how things were done in that bank. It reminded me of a child repeating a lesson to himself so he'd be sure not to forget it. Of course, I already knew how things were done in the bank, because it was precisely what I was complaining about! This seems to prove that arrogance can be carried to the point of outright stupidity.

What has happened to the standard (which apparently now is ancient history) in sales and service which said, "The customer is always right"? This used to be accepted as one sure way to sell people and keep them sold. But in banking they aren't concerned with selling because people have to have banks, or else keep their money in a rusty box under a creaky floorboard.

So the concept of "selling" as a part of banking has seemingly gone out of the banking business. Today, when you deal with a bank, you pay money for the privilege of being told how it is to be used. Instead of selling (TV commercials notwithstanding), or in place of plain simple courtesy, you have arrogance.

Unfortunately, banks are in a position to be arrogant and get away with it. Unless you possess wealth on the corporate scale and have it all in one bank (unlike the careful W.C. Fields), it's hard to make any sort of impression by indignantly canceling one small checking account (which I have done).

So, keep roasting 'em, Alan Taylor. I like to believe it does some good.

H. Cross, Jr.
Waterford, Conn.

Moveable Subject

In every issue *Computerworld* states: "Moving? Please notify *Computerworld* at least four weeks in advance . . . "

It would make interesting and enlightening reading (most likely in line with reports on sluggish compilers, unwieldy operating systems, foul-up in various user services, etc.) to find out why a change of address takes four weeks. Is this the state of the art?

Generously allotting one week for the notice to reach you and one week for the new address that just missed the current issue at the terminal end of the four-week period, you have 14 days to process the change!

Very sincerely and respectfully, what does CW (as well as other periodicals) do with a change notice for 14 days? A process that takes so long must be expensive, complicated and involved.

A. V. Dundzila, Manager
Data Systems and Services
and Assistant Professor
Computer Science
Purdue University
Hammond, Ind.

Address changes must be checked against current galley, coded, keypunched and included on an update. We also get information on address changes from the Post Office and if change from subscriber is a duplicate, it would kick out during the update.

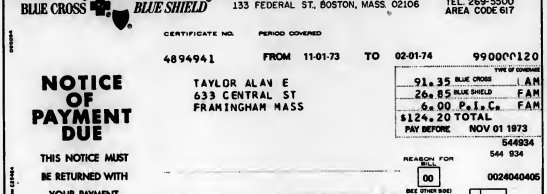
Most address changes are completed in a two-week period, but if we advertised that it took only two weeks and had a duplicate problem we would anger subscribers. In addition, our readers are a very mobile lot — approximately 55% of the names on our list have some title/company/address change made every year. WB

Blue Cross Bill Clears Bank, Indicts Itself

The problem of whether my bank or Massachusetts Blue Cross has the missing $124.20 I used to pay my Blue Cross insurance premium [CW, Oct. 17] is settling down, and it now looks as though Mass. Blue Cross had it all the time.

The Taylor Report
By
Alan Taylor, CDP

Blue Cross's bank – National Shawmut – is currently dragging its heels awaiting "higher authority" to approve saying in writing that Blue Cross has my money, but the major cause of the confusion in the bank operations has apparently been changed.



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CERTIFICATE NO. PERIOD COVERED

4894941 FROM 11-01-73 TO 02-01-74 990000120

NOTICE OF PAYMENT DUE

TAYLOR ALAN E
633 CENTRAL ST
FRAMINGHAM MASS

TYPE OF COVERAGE

91.35 BLUE CROSS AM
26.85 BLUE SHIELD FAM
6.00 P.I.C.Co. FAM
$124.20 TOTAL

PAY BEFORE NOV 01 1973

544934
544 934

REASON FOR MISC. 00

0024040405

(SEE OTHER SIDE)

THIS NOTICE MUST BE RETURNED WITH YOUR PAYMENT.

IF YOUR ADDRESS IS DIFFERENT, CHANGE IT ABOVE.... ☐ PERMANENT ☐ TEMPORARY UNTIL

This Notice of Payment Due, received after the article "Who Took My Cash? Was It Blue Cross or My Bank?" [CW, Oct. 24], probably exonerates the bank because there would be no such payment due if the Blue Cross computers did not previously used the same stamp to endorse all checks without stating on whose authority they were being endorsed, now know about the receipt of the previous payments that Blue Cross offices deny having received.

has separate stamps for the various customers. That's one step forward, anyway.

But even without the bank's written statement, more evidence which apparently clears the bank and implicates Mass. Blue Cross has come in since I wrote my Oct. 17 report. Moreover, this evidence has come directly from the Mass. Blue Cross computers, so I think it is fairly conclusive.

The Mass. Blue Cross computers have to cope with two related but fundamentally different systems – a billing system and a benefits system. The billing system deals with the billing and collection of cash, while the benefit system determines whether a claim is to be accepted.

The two systems cannot be directly tied together for all the normal reasons. Under normal operations the subscriber has a 35-day grace period to make payment, after the first day of the premium coverage. During this period, therefore, he is only contingently insured.

Even after the expiration of the grace period, he can still be insured through a reinstatement policy. Reinstatement can occur up to a year after a policy has lapsed – so claims rejected for non-payment of premiums within a year have to be kept available in case reinstatement is approved. So non-payment does not guarantee non-benefit.

The system used by the Blue Cross supervisor to determine that I was not insured was apparently the benefit system. The supervisor told me this is a most reliable system and works perfectly – as far as the subscriber is concerned – even though a recent system change was made.

Under this system, she said, payments received by Blue Cross are recorded into the benefit system within 24 hours, and claims rejected earlier are then automatically reviewed to honor any reinstatements.

Unfortunately, as I suspected, all this is simply not true. The final evidence came in October when the benefit system belatedly issued an $80 check for a claim it had rejected in January.

The claim had been originally processed Jan. 26 and 30. My policy at that time was firmly in force and the check covering the payment of the premium had been received and cashed by Mass. Blue Cross in late December.

So payments were not being credited within 24 hours as they are supposed to be.

Moreover, not only did I have to start asking questions myself, but I had to ask them repeatedly before the benefit system paid the claim that had been due since January. In March, I inquired about the matter and was told "a computer error had occurred," that my December payments had only entered the computer system on Jan. 30, and that everything would now be all right.

Then in September, when nothing had happened, I asked again and the system did begin to work – and the claim was paid.

But apparently, not only does the sys-
(Continued on Page 13)

If you have a voice in company training, you have a responsibility to ask yourself these questions:

1) Is the cost effectiveness of your present training efforts acceptable?

2) Is it possible to put your internal and customer programs in multi-media format, thus decreasing training costs and insuring standardization?

3) Are you now conducting training programs but lack certain methods, materials or instructor talent?

4) Is there a gap between company goals and technical capabilities, i.e., need for updating skills in Data Base Management, Data Communications, Business Systems Analysis and Design, Virtual Storage, Project Management, etc.?

5) Is your in-house training capability providing the quality and productivity levels you require?

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The DP Shortage ...Old Habits and New Hangups — Part II

Avoid That Shortcut Hiring Solution

By Brooke W. Boering
Special to Computerworld

Cease hiring on the basis of compatible hardware or software experience.

As a contributor to the problem of the pool of "floaters" in our business, this factor must be considered the prime culprit. Typical is the DP manager hard pressed to get an application on-the-air, who selects on this basis since it avoids the delays (and costs) in retraining.

Far too much has been spoken and written about the computer personnel shortage, a subject on which there exists little real expertise.

At issue are old habits and new hangups, a few clichés and some meaningless witticisms, a problem that burdens our field, seemingly unsolvable in a profession that professes to solve the world's problems. Dare we face the issues squarely?

In reality, good computer people with two or more years of experience are quite easily and quickly retrained for different computers, languages, operating systems, etc., while the ineffective, incompetent and otherwise low-grade producers are a bad bargain regardless of length and/or directness of experience.

It is indeed amazing how common this practice is today, especially among users of IBM equipment where the "shortcut" solution is so available.

Accept the responsibility of training inexperienced people who are possessed of the necessary aptitudes.

How often the lament is heard, "I can't afford to train people only to lose them. That's why I hire only experienced people." Losing good people is a problem generally unrelated to in-house training.

If anything, locally trained people will tend to stay put longer, other factors being equal. It's also important to recognize this same failure is largely responsible for the intense competition for experienced personnel. Both people from outside the organization who wish to enter the field and present employees with similar desires are sources in whom the fiber can be discovered from which competent professionals are developed.

Reject the notion that a site can tolerate a wide variety of competence without appropriate compensation differentials.

We delude ourselves when we imagine employees aren't aware of salaries within the organization (or outside for that matter).

Worse still is the self-deception that our best people may not be cognizant of their relative worth. The superior professional knows quite well his value compared with others.

If he is not compensated on some value-related basis, he rightfully interprets this as a lack of appreciation of his true utility. What with the pressure to hire and pay high minimums to the misfits and "dumb-dumbs," the solution is neither easy nor apparent.

One possibility is to enforce realistic spreads in compensation regardless of consequences. The danger of this is only that we might lose all our low-quality help and gain increased loyalty from our best, an unheard-of situation.

Another approach is simply to not bother hiring those who cannot pay their way, another way of saying, "set your standards high (but not your fences)."

Brooke Boering is assistant vice-president, Talman Federal Savings and Loan Association, Chicago.

Blue Cross Bill Exonerates Bank

(Continued from Page 12)

tem not handle prior claims properly, it can even ignore input that such claims have not been handled.

So much for the benefit system. It is clearly unreliable. But that is only indirect evidence that Mass. Blue Cross has my cash. All this evidence shows is that statements of not being in the benefit system cannot be trusted. Evidence that payment has actually been made must come from the billing system – otherwise the bank might still be at fault.

Luckily, the Mass. Blue Cross billing system computers also cooperated with me. In October they sent me a "Notice of Payment Due" for the period November 1973 through January 1974. It was an ordinary bill, not a reinstatement notice. This indicated the billing computers had received records of my previous payments. *Otherwise, if my account had in fact lapsed for non-payment, there would be no payment due.*

So that is the current position. I think Mass. Blue Cross has my cash and I should be insured. I can't get confirmation because Mass. Blue Cross refuses me the right to even look at my account payment record.

But I don't think I need to see it now. Not when the Mass. Blue Cross computers have provided their own evidence of payment, and of unreliability.

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How to Better Understand DP

Professional Societies Care About Educating Public

By James Augustine Jr.
Special to Computerworld

Now that J. P. Frankenhuis has gotten all of the hostility out of his system [CW, Oct. 3], I must take issue with some of his comments.

To begin with, he stated that within professional societies related to the computer field "there is no militancy, no unity of purpose, not even a simple statement of basic principles to make any of these associations stand out or make the computer professional feel he is being represented."

On what criteria does he base this opinion?

I wonder just how many societies he has investigated in the development of such broad assumptions. He must certainly realize that if enough members of any association feel as he does, the association would naturally move to meet their demands.

After all, the individual members eventually determine the purpose and the type of activities that the organization pursues.

Frankenhuis further stated: "... not a single computer-oriented association has ... shed a better light on the industry and done away with the image of intellectual supermen ..."

Viewpoint

This is another broad statement with which I cannot fully agree. There are numerous organizations that do not fit this description.

I will speak for only one, however – the Association for Educational Data Systems.

One of our primary aims is to inform professional educators of the many ways computers can be used within the educational field. Our membership consists of many non-technical users who have come to AEDS for a better understanding of computers. We conduct local workshops, state conferences and an annual international conference for professional educators, administrators and technicians.

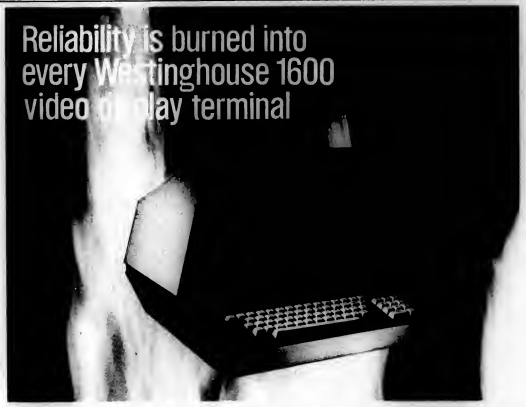
I might add these functions are not held for our members alone but for anyone wishing to learn more about computers.

All this is mentioned simply to point out to Frankenhuis that there do exist computer-oriented associations interested in removing any mystery surrounding computers.

I do not intend to convey the impression that AEDS, as well as other similar organizations, has no room for improvement. I want to emphasize, however, that the quality and the quantity of any association's activities are directly related to the amount of participation and support of its members.

It stands to reason, therefore, that any dissatisfied member can either leave the association or assume an active role in promoting his concepts. Any organization with too many dissatisfied members will certainly not exist very long.

James Augustine Jr. is president of the Association for Educational Data Systems in Washington, D.C.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Letters to the Editor

The 'Best' and the 'Only' The 'Most' Misleading

In the Sept. 19 issue, I noted an advertisement in which a company purports to be the "only professional organization in the country concentrating the major portion of its talent in data base."

I wish to point out that this statement is not only false and misleading, but potentially damaging to at least three other firms who are "professional organizations concentrating the major portion of talent in data base" (including ourselves).

It is obvious the advertisement was incorrect on this issue. Furthermore, it is our view that the company is likely to have been aware of this misstatement, as principals of both the advertiser and our organization have appeared jointly at several forums, and have also competed directly on several occasions.

It is further our view that *Computerworld*, as a leading journal which has on numerous occasions railed against practices of this nature, should exercise direct control over advertising copy that is so general that it is misleading, unfair and perhaps injurious to competitors.

Harold Uhrbach
President

DBD Systems, Inc.
Oceanside, N.Y.

Without commenting on the advertisement in question, we wonder about the effectiveness of claims of "only-ness" or superlatives such as "biggest, newest, fastest."

Since many companies choose to convey their messages with such adjectives, we can only advise users that the rules of shopping apply in the computer business, too. *Caveat emptor* is where you must begin, and claims of only-ness or other superlatives are one place where *emptors* normally *caveat*.

Whether users believe such claims is a separate matter, and countless dollars are expended annually by advertising firms to find out just what motivates buyers.

Regarding Uhrbach's suggestion of advertising censorship, the Federal Trade Commission, of course, operates in a reactive mode. Creating an agency or consumer testing bureau that could operate in a preventive mode, or that could at least check advertising copy for obvious flaws, is an interesting possibility.

But could such an agency be operated by a newspaper, and specifically by its editorial department? Feedback from other readers will shed some light on the subject. EB

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. *Computerworld* reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

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In addition to insuring your equipment and media, The St. Paul covers loss of earnings, extra expenses of staying in business, even coverage for valuable papers and accounts receivable.

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EDP. It's the kind of innovative insurance that's made us a leader for over a century.

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The Computer Caravan brings exhibitors and users together in a user-oriented, professional forum and exposition. The forums, workshops, panel discussions and seminars focus on an exchange of timely, practical information among users and independent experts. And the exposition gives users a chance to review a wide variety of the latest equipment and services, with their current needs in mind. This unique combination of forum and exposition gives computer users the first practical method of learning about and selecting equipment from a variety of manufacturers. And the results in sales are very impressive.

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If you're a marketer, now is the time to act. The Caravan can accommodate 100 booths, and more than half of those have already been spoken for. We have all the facts you need to examine the new EDP marketplace closely, and we'd be glad to go over them with you. Just call Neal Wilder or Dottie Travis at (617) 965-5800. Or write to us at Computerworld, 797 Washington Street, Newton, Mass. 02160.

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SOFTWARE & SERVICES

DOS Spooler Cuts CPU Time 28%

SEATTLE, Wash. – The Intercept spooling package for DOS/360-370 users, originally developed by Day's Inc. [CW, Jan. 31], is now available from Keywrite Corp. Day's developed the program when it wasn't satisfied with results it had in tests of other packages then on the market.

The new spooler, like others, moves printer output to high-speed disk so the application program execution isn't delayed by the relatively slow 1403 or 1443 line printer. Intercept does not spool card-reader input or card-punch output since these capabilities, for Day's and for most users, are insignificant, Keywrite said.

Compared to non-spooled operations, Intercept cut Day's machine time by 28%, according to DP manager Ed Decker. The other spoolers also cut machine time requirements, he agreed, but by no more than 16% in benchmarked situations.

Intercept moves the output to the printer as the device becomes available, independent of the application program, but not waiting, as some spoolers do, until the program has completed its run. If the printer gets too far behind and the assigned disk buffers become full, Intercept will stop the user program until lines can be printed and buffer space is again available.

Intercept does not require a dedicated partition but it must run in a partition with a higher priority than the one in which the application program is executing. This means in effect that it runs in F1 or F2, a Keywrite source noted.

The spooler takes 6K of memory if it is supporting 2311 disks or 8K if it is working with 2314s or 2319s. It normally utilizes 20 cylinders of disk space and has been implemented on 360/30, 360/40 and 370/135 equipment, the spokesman added.

Intercept is available for a one-time cost of $1,500. Keywrite is at 1200 North 107th St., 98133.

HP-3000 Gains Cobol, File, Terminal Features

PALO ALTO, Calif. – Hewlett-Packard has released a new version of its multiprogramming operating system for the HP-3000 processor.

Known as version B of the multiprogramming executive, the upgraded software is said to support up to 16 terminals and eliminate some of the previous overhead in file and I/O system management. In addition, the new version is said to include improved disk patching logic.

Version B has added a Cobol capability together with a Sort/Merge feature which is now available in addition to the previous languages supported by the operating system. These earlier languages were Fortran, Basic and an HP Systems Programming Language.

The software also includes expanded file security features, accounting and logging capabilities, and a disk error recovery capability, all of which give the 3000 "initially conceived customer advantages," according to an HP spokesman.

With the upgraded software, users can execute batch jobs "and many terminal sessions concurrently," according to a company spokesman. In one configuration 16 terminals were supported but the exact number depends on the application, the firm said.

The increased capabilities are due to an improved system design which integrates a "multiprogramming virtual memory operating system on a stack architecture processor," HP said.

To handle multiple terminal configurations, the company has added a standard 16-port controller with a system console based on the GE Terminet for all configurations.

Memory additions to handle the new software include an expansion from 64K to 128K for $20,000, compared with the earlier price of $35,000.

Overall system prices for the 3000 are down "10% to 20%," HP said, adding that a typical configuration with 128K, terminal controller, mag tape, disk and card capabilities with a printer now is priced about $185,000 or 12% less than previous prices, the firm said.

All 3000 systems now include the version B software which has undergone five months of testing, according to an HP spokesman. The operating system is now installed at more than 20 customer sites, he added.

HP is at 1501 Page Mill Road, 94304.

7 Steps to Software Selection

Separate Wheat From Chaff, Users Told

By Michael Weinstein
Of the CW Staff

TORONTO, Ont. – Despite the fact that vendor-supplied software packages can provide many advantages, users must be careful to select the wheat from the chaff, according to Larry Duncan of Data Crown Ltd.

To avoid ending up with the chaff, Duncan suggested seven steps users can follow when looking for software packages:

- *Define your needs and write them down.* This should be a cardinal rule of any data-processing project. This initial listing of needs is invaluable when the user goes back to evaluate the results.
- *Users should actively search for products.* Don't settle for the first one that comes along, he noted. "Don't reject possible custom-tailoring of one that doesn't quite fit, but be prepared for the cost of doing so. Use all available sources to find out about the packages that could help you," he added.
- *Evaluate the suppliers starting with yourself as an in-house supplier.* Starting with an in-house evaluation will help the user put the others in more realistic perspective.

"If you are nervous about a supplier, think hard before buying his products and make sure your agreement protects you as well," Duncan said.

The best evaluation technique is to talk to current users. Chances are good you'll be treated the same way they are," he asserted.

- *Evaluate products with the intention of not spending time evaluating more than two or three in detail.* Try to avoid benchmarking a product until you're pretty sure you want it.

Avoid detailed feature comparison unless you have put values on the features before you started. And once you think you have identified a product you want, start negotiating acquisition terms.

"Don't wait until you have completed your evaluation and told the salesman you want his product, before starting to talk about cost," Duncan said.

- *Make sure the terms of the agreement protect both you and the supplier.* "The supplier will have a standard agreement that protects him, and it is up to you, the buyer, to ensure you are protected, Duncan cautioned.
- *Implementation of the package should be done with the same planning and care used to implement a new in-house program.* "It is especially important to ensure success in the early stages, to avoid or overcome the natural resistance that might exist toward the new package," he said.
- *After the package has been installed for a few months, go back and evaluate the results to ensure that the projected benefits were achieved.*

"No matter what you find, this reevaluation is a most important part of building your knowledge of how to maximize benefits from software packages," Duncan said.

'Minitab' Makes Math Easy

UNIVERSITY PARK, Pa. – A general-purpose computer program – Minitab – promises to be so simple almost anyone can be using a computer to solve statistical problems after only an hour of personal instruction, according to the developers at the University of Pennsylvania here.

Developed and tested for classroom use, a spokesman said, Minitab acts as an "interpreter" for the student. Under the old approach, "students either had to spend a semester learning to write programs in complicated languages like Fortran or learn to use a rigid packaged program before using the computer."

With Minitab users begin interacting with the computer immediately. "Students who have studied a year of statistics can use the manual (in conjunction with the computer) to teach themselves," the spokesman added.

To perform an analysis the user punches out a series of cards with data or the names of the operations the student wants the computer to perform.

Most cards correspond to one of the operations a student would ordinarily do by hand. When the cards are fed into the computer, each card becomes a command which the Minitab program reads, looks up in a dictionary, checks for errors and then tells the computer to execute.

Despite its tedious appearance, the spokesman noted, a typical operation using Minitab might take the user about 15 minutes. This same statistical operation would take about an hour to perform by hand and much longer using traditional computer languages like Fortran, he said.

At the computer end the system has the same speed characteristics, he added. "The system usually completes a job consisting of numerous commands in less than five seconds on the university's IBM 370/165.

Currently the developers, Professor Thomas Ryan and Associate Professor Brian Joiner, have no plans to market the Minitab system on a national basis but they have given the system to several other colleges and universities.

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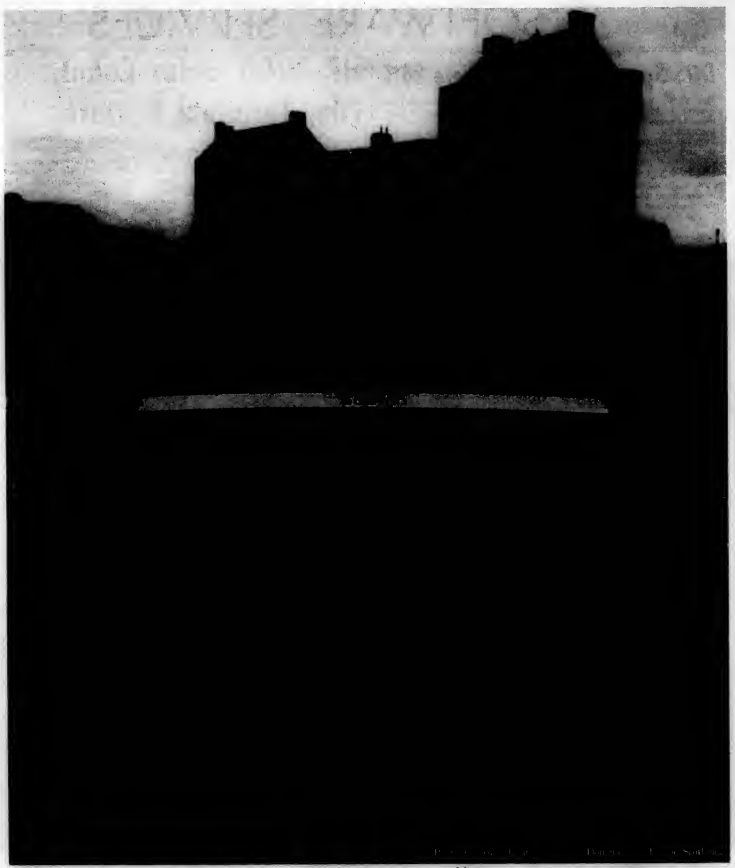

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COMMUNICATIONS

Data Briefs

MCI and N-Triple-C Merger Will Not Affect Nets' Users

WASHINGTON, D.C. – MCI and N-Triple-C, two specialized common carriers, have agreed to merge, thereby providing communications users with a common integrated network.

Both companies reached an agreement which is now subject to approval by stockholders. The actual merger is expected to be finalized within 60 days, according to an MCI spokesman.

Technical discussions concerning the merger of facilities have already begun and service to users will not be affected, the spokesman said. Both networks were described as "fully compatible technically" and no interruption of service to users is expected, the spokesman said. The combined network will be operated by MCI.

Penril Has 300 Bit/Sec Modem

ROCKVILLE, Md. – Penril Data Communications has introduced a 300 bit/sec half/full duplex modem that is Bell 103-compatible.

Penril's Model 300A operates over the DDD network and offers automatic call origination, automatic answer and internal call-abort timing.

Diagnostics include a loop-back test capability that enables the operator at one site to test the modems at each end plus the interconnecting telephone lines.

The Model 300A costs $795 with delivery in 30 days from the firm at 5520 Randolph Road, 20852.

Syntonic Expands Service

PENNSAUKEN, N.J. – Syntonic Technology, Inc., a wholly owned subsidiary of Control Data Corp., has announced nationwide expansion of its third-party maintenance service to include TTY models 28, 33 and 35.

A monthly service for a Model 33 KSR would be $22 and $30 for either a Model 28 KSR or a Model 35 KSR, a spokesman said.

The service is available from the firm at 7150 Airport Hwy., 08109.

Hardwired Terminal for Minis

ST. LOUIS, Mo. – Interface Technology has brought out an interactive data entry terminal to be hardwired to a local System/7 or minicomputer.

The Model 735 has a keyboard with 10 numeric keys, a send key, a decimal point and four function keys. There are eight LED displays on the standard unit, with 12 or 16 optional.

The terminal costs $366 with delivery in 45 days from the firm at 10500 Kahlmeyer Drive, 63132.

DUA Speaker Predicts

Bell Claims of Harm Will 'Dissipate'

By Ronald A. Frank
Of the CW Staff

ATLANTA – The Bell System's claim that the telephone network has been harmed by the interconnection of non-carrier equipment "will be dissipated," according to Howard A. White, senior vice-president and general counsel of ITT World Communications, Inc.

Speaking before the annual conference of the Digitronics Users Association (DUA), White said his prediction was based on the fact that "hundreds of millions of dollars worth of interconnect equipment" has been connected "without adverse effect on the telephone network."

Reviewing other pending regulatory problems, White said the North Carolina proposal to ban all non-carrier equipment had "the makings of a first class federal-state conflict.

"Not surprisingly, the Bell System is supporting this new espousal of states rights," he added. Trying to analyze AT&T's motives in some of its recent regulatory actions, White said the carrier apparently "feels threatened, rather than challenged by competition" from the specialized common carriers.

Any restraints now on the new competition in the communications field would be "stacking the deck in favor of Ma Bell," White said. "The public should decide, through exercise of free choice, which carriers and which suppliers best meet its needs."

Transferring Funds

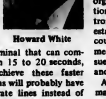
During a conference seminar on recent developments in the area of Electronic Funds Transfer Systems (EFTS), Perry L. Hudson, vice-president of the Bankamericard division of the Chase Manhattan Bank, told users the plastic card holds the key to the payment mechanisms of the future."

In many on-line banking tests, the cash card is joining the bank card as a required item by the consumer. The cash card is used to directly debit the customer's account at the bank according to pre-arranged procedures, Hudson explained, while the bank card is used strictly for credit transactions.

John B. McCoy, vice-president of the City National Bank & Trust Co., Columbus, Ohio, described the Post 1 test in his city where 60 IBM terminals were connected through acoustically-coupled dial-up lines to a bank. The 2730-type terminals were installed at 30 merchants and about 20,000 cards were issued to customers in the area.

The terminals worked in about 60% of the locations but the transaction time, which McCoy said was critical in a discount store, was "too long" at 50 seconds per transaction. To pay for such a system, a merchant must have either "high losses or high volumes," he said.

Despite the addition of automated credit transactions and a second plastic card, the habits of customers did not change. The average shopper used his card two times per month both before and after the test, McCoy said.


Howard White

Different terminals that provide a faster transaction time are important and the bank is now evaluating an Addressograph-Multigraph terminal that can complete a transaction in 15 to 20 seconds, McCoy said. To achieve these faster speeds, on-line systems will probably have to operate over private lines instead of dial-up facilities, he predicted.

Echoing the time problem, Hudson said current voice response systems are unsatisfactory for credit transactions because "it takes four seconds to speak an answer." By comparison, a "visual response" can be transmitted in one-half second thereby saving 3.5 seconds per transaction, he said. Because of this time disadvantage, he said, the future of voice response for this type of application is limited.

Name Changed

During a business meeting, DUA members voted to change the name of the user organization to the Inmec Users Association, reflecting the recent merger of Digitronics with Inmec. It was also agreed to establish an advisory panel to provide counsel on industry technical developments, regulatory policies and other issues of importance to communications and data entry users.

Arthur Boutiette, inventory control manager of Fernandes supermarkets, Norton, Mass., was elected president of the organization. It was voted to have next year's conference in Montreal.

Centronics Model 308 Teleprinter Can Save Users More Than 40%

HUDSON, N.H. – A teleprinter operating at 120 char./sec that can save users more than 40% over comparable devices has been introduced by Centronics Data Computer Corp.

The Model 308 impact matrix printer and keyboard combination will cost $2,690 compared with the GE Terminet which is priced at $4,595, a Centronics spokesman said.

The Model 308 is available with both upper- and lower-case characters in addition to a "bold-face" font, and includes a "recirculating" buffer which can store 132 characters.

The teleprinter is primarily designed as a replacement for teletypewriters in interactive applications, according to a spokesman.

Among the operator-oriented features of the terminal are an illuminated column print position indicator that displays the location of the next character to be printed and an optional RS-232 communications interface.

The Model 308 with communications capability will cost "under $3,000," the spokesman said.

The terminal normally has a 64-character Ascii set which is expandable to 128 characters that will allow the unit to contain two full fonts, where required. Normal transmission speed is 1,200 bit/sec but the unit can handle transmissions up to 9,600 bit/sec. Presumably this would require the addition of a storage medium such as magnetic or paper tape.

In addition to the KSR version, the 308 will be available in a receive-only model priced at $2,490.

The 80-column sprocket-feed terminal features an incremental printer that allows one character at a time to be printed. After a print operation, the print head stops ahead of the last character printed allowing the operator to visually verify the data.

First deliveries of the 308 are scheduled for January 1974. Centronics is at One Wall Street, 03051.

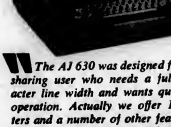
I.I. Communications Has 208-Type Modem

WILLOW GROVE, Pa. – I.I. Communications has announced a Bell 208A-compatible transmitter/receiver modem providing 4,800 bit/sec transmission over voice-grade private line channels.

The IIC 208A is designed for continuous-carrier or switched-carrier applications, the firm stated.

A three-position test switch permits local and remote loop-back testing. The modem also includes a pseudo-random data simulator.

IIC's 208A modem will cost $2,650 with first production units available in January from the firm at 139 Terwood Road, 19090.



The AJ 630 was designed for the time-sharing user who needs a full 132-character line width and wants quiet, reliable operation. Actually we offer 140 characters and a number of other features which the experienced user appreciates.

Gerard W. Schoonmaker, Director of Marketing

With the AJ 630 you get MORE than a Quiet, Reliable, Wide Carriage Terminal.

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SAVE $20,000 ON OUR NEW DBOS.

DEC's disk-based systems will run you about $60,000.

Our DBOS-II is only $39,500 and it's superior to any disk-based system on the market.

If we haven't got your attention yet, maybe we should mention that our DBOS-II lets you do more computation with less memory in far less time.

You get faster program generation because we give you both scientific and commercial languages.

While other systems are confined to either interactive or batch operation, DBOS-II offers a combination of both. Plus a comprehensive file management system, text editors, interactive debug routines, mathematical functions and commercial libraries. That explains our faster program implementation.

As for program execution, we do it faster because the heart of our system is the SPC-16/65 minicomputer which has the most powerful instruction set available and therefore requires less memory.

AND UP TO $40,000 ON OUR NEW RTOS.

If you want to combine your program generation and computation with control of real-time tasks, DEC's RSX-11D will set you back more than $80,000.

Our new RTOS-II will do the job for $46,950. And if you don't need a line printer and card reader, we can start you out at $29,950.

RTOS-II has all the advantages of DBOS-II in background, with a very responsive foreground for handling events that occur in real time.

And compared to DEC's RSX-11D, we pack more power and features in far less memory.

You can tailor our system to fit your application starting with as little as 16K memory, expandable to 128K.

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Some manufacturers go to incredible lengths to protect their juicy trade secrets.

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The reasons we can give you price/performance advantages are all spelled out in "The Value of Power." For a free copy, or for more information on RTOS-II or DBOS-II, write General Automation, 1055 South East Street, Anaheim, Calif. 92805. If you're in a hurry, call (714) 778-4800.

GENERAL AUTOMATION

Monitoring System Uses Coaxial Cable

DANBURY, Conn. – Comptrol Corp. has an industrial monitoring and supervisory control system using two-way communications over coaxial cable.

Digital data from the cable goes through Radio Frequency (RF) to digital modems to reach the computer peripherals. Digital data transmission can be as fast as 500 kbit/sec, a Computrol spokesman stated.

A terminal concentrator handling one remote data terminal costs $895. A terminal concentrator handling eight terminals costs $1,120 and one handling 16 data terminals costs $1,360, the spokesman noted.

The remote terminal concentrators interface remote devices to the system. They select requested points, multiplex analog signals, perform A/D and DA conversions and inform the processor/controller of special occurrences, the firm stated.

The system's base station consists of a DEC PDP-11 combined with interfaces and peripherals for readout, display and printing.

A typical installation's base station consisting of the mini, a teletypewriter, a keyboard and a digital display device would cost about $25,000, the spokesman said. The 500 kbit/sec modems cost $300 each, the spokesman added.

The cable itself costs about $2/ft with conduit, according to the Computrol spokesman.

Delivery of such a system is five months from the firm at P.O. Box 441, 06810.

Begone, Cards!

COSTA MESA, Calif. – Western Telematic, Inc. has introduced a card eraser to erase completely magnetic cards for the IBM Mag Card Selectric Typewriter (MCST).

The ability to erase rather than write over old text prevents accidental overrun onto a previous recording, the firm noted.

Cards ready for reuse can be passed through the eraser as often as required, the firm said.

The Mag Card Eraser costs $75 from the firm at 3001 Red Hill Ave., Bldg. 5-107, 92626.

TMA Group Set

PITTSBURGH – A group of telecommunications professionals in the Pittsburgh area has formed the Telecommunications Management Association (TMA).

The new association's members are Pittsburgh-area company representatives whose major duties are in telecommunications: data, voice or both.

Further information can be obtained from second Vice President Al Bascom at PPG Industries, Inc., One Gateway Center, 15222; or Will Schomberg at the Bessemer & Lake Erie Railroad Co., 1535 Gateway Four, 15222.

Who's Who?

RAMSEY, N.J. – The Center for Communications Management has an International Telecommunications Register which lists 1,500 individuals from over 100 countries by category of interest and working responsibility.

Annual subscription is $70 per copy plus $3.50 postage from the center at P.O. Box 324, 07746.

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MDS Interactive Controller Joins Data Collection, Display Systems

UTICA, N.Y. – Mohawk Data Sciences has introduced an interactive controller to connect the firm's MDS 4400 Source Data Collection System and the MDS 2409 Key-Display System.

With the Model 4408-1 Data Collection Controller, data from the industrial data collection system's input station goes to the key-display system's processor. That processor "treats [data] like a batch on disk," a Mohawk spokesman said, allowing quick recall of open batches onto special CRT monitors.

Through the monitor, the user can look up a particular batch of data from the 4400 system and can page down to a particular record and alter it if desired.

The monitor is a 2491 CRT with the added capability to operate on an open batch, search for a record and correct it.

The combined network may contain up to 48 industrial data collection stations, plus eight CRT keystations for monitoring or key entry. Other balances are possible, but the maximum configuration must not exceed 56 stations.

A combined system, including a 2409 processor with the necessary core memory; a disk capable of holding 28K records; eight keystations, any or all of which can be defined as monitors; one tape drive; the 4408-1 controller; interfaces for the processor and tape drive; four industrial work stations and four attendance stations would cost $2,400/mo including maintenance, the spokesman said.

While 4400 and 2409 stand-alone systems are available now, the controller will not be available until the second quarter of 1974.

Mohawk Data Sciences is at Box 362, 13503.

HP Package Emulates IBM 2780 Terminal

PALO ALTO, Calif. – Hewlett-Packard has introduced a software/hardware package for its HP 9600C/E measurement system that emulates an IBM 2780 data transmission terminal. The package allows the HP measurement system to communicate directly with an IBM 360/370 mainframe.

The HP 91780A Remote Data Transmission Subsystem (RDTS) package gives the mini-based measurement system access to the power of a larger computer for storage and large-scale calculations, an HP spokesman said.

Shared Peripherals

A measurement system with RDTS can handle its measurement work and remote-batch work concurrently, the spokesman added. The program allows line printers, card readers, magnetic tape units and paper tape readers to be shared between measurement and RJE work, he noted.

RDTS includes a choice of Ebcdic and Ascii code sets and operates with Btam, Tcam and Hasp software.

Any HP 9600 disk-based or core-based measurement system using RTEC or RTE software can be adapted to the RDTS package, the spokesman said.

The RDTS package costs $4,500 with delivery in 60 days from the firm at 1501 Page Mill Road, 94304.

10-Digit Display Transmits Limited Amounts of Data

BERWYN, Pa. – Mega Products Corp. has a terminal with a 10-digit display for applications needing limited amounts of data.

Mega's Model 10-9 is a visual display/data inquiry terminal with nine back-lit panels, a 16-character keyboard and an indicator light which informs the operator when the terminal is transmitting.

The unit's buffer allows transmission or reception of up to 48 characters. Paging permits review of selected fields.

The terminal costs about $300 in OEM quantities from the firm at P.O. Box 534, 622 Lancaster Ave., 19312.

Nato Network Operational

LONDON – The design and installation of the 3,000-mile computerized Nato air defense network is now operational throughout the Nato territory from above the Arctic Circle to Asia Minor.

Nadge (Nato Air Defense Ground Environment) involves a complex system of radars, computers and other electronic subsystems to make it possible to detect, identify and intercept intruding aircraft.

There are 84 Nadge sites located around the world.

Possible expansion of the system could include certain shipboard defenses, full integration with U.S. defenses, and additional radars.

The Computer Caravan welcomes: Quantor

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Quantor will be displaying a fully operational Q105 off-line microfiche recorder/processor. The Quantor 105 converts computer output tapes into finished microfiche. It delivers cut, dried microfiche (one per minute) ready for displaying or duplicating. The Q105 has a self-contained automated photo development laboratory. Also displayed will be quantor microfiche viewers.

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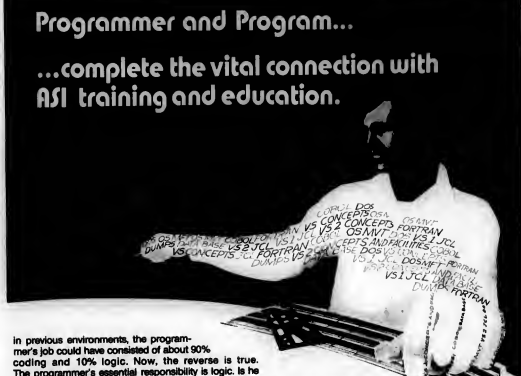

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Monitoring System Uses Coaxial Cable

DANBURY, Conn. – Computrol Corp. has an industrial monitoring and supervisory control system using two-way communications over coaxial cable.

Digital data from the cable goes through Radio Frequency (RF) to digital modems to reach the computer peripherals. Digital data transmission can he as fast as 500 kbit/sec, a Computrol spokesman stated.

A terminal concentrator handling one remote data terminal costs $895. A terminal concentrator handling eight terminals costs $1,120 and one handling 16 data terminals costs $1,360, the spokesman noted.

The remote terminal concentrators interface remote devices to the system. They select requested points, multiplex analog signals, perform A/D and DA conversions and inform the processor/controller of special occurrences, the firm stated.

The system's base station consists of a DEC PDP-11 combined with interfaces and peripherals for readout, display and printing.

A typical installation's base station consisting of the mini, a teletypewriter, a keyboard and a digital display device would cost about $25,000, the spokesman said. The 500 kbit/sec modems cost $300 each, the spokesman added.

The cable itself costs about $2/ft with conduit, according to the Computrol spokesman.

Delivery of such a system is five months from the firm at P.O. Box 441, 06810.

Begone, Cards!

COSTA MESA, Calif. – Western Telematic, Inc. has introduced a card eraser to erase completely magnetic cards for the IBM Mag Card Selectric Typewriter (MCST).

The ability to erase rather than write over old text prevents accidental overrun onto a previous recording, the firm noted.

Cards ready for reuse can be passed through the eraser as often as required, the firm said.

The Mag Card Eraser costs $75 from the firm at 3001 Red Hill Ave., Bldg. 5-107, 92626.

TMA Group Set

PITTSBURGH – A group of telecommunications professionals in the Pittsburgh area has formed the Telecommunications Management Association (TMA).

The new association's members are Pittsburgh-area company representatives whose major duties are in telecommunications: data, voice or both.

Further information can be obtained from second Vice President Al Bascom at PPG Industries, Inc., One Gateway Center, 15222; or Will Schomberg at the Bessemer & Lake Erie Railroad Co., 1535 Gateway Four, 15222.

Who's Who?

RAMSEY, N.J. – The Center for Communications Management has an International Telecommunications Register which lists 1,500 individuals from over 100 countries by category of interest and working responsibility.

Annual subscription is $70 per copy plus $3.50 postage from the center at P.O. Box 324, 07746.

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CONDATA INC.

MDS Interactive Controller Joins Data Collection, Display Systems

UTICA, N.Y. – Mohawk Data Sciences has introduced an interactive controller to connect the firm's MDS 4400 Source Data Collection System and the MDS 2409 Key-Display System.

With the Model 4408-I Data Collection Controller, data from the industrial data collection system's input station goes to the key-display system's processor. That processor "treats [data] like a batch on disk," a Mohawk spokesman said, allowing quick recall of open batches onto special CRT monitors.

Through the monitor, the user can look up a particular batch of data from the 4400 system and can page down to a particular record and alter it if desired.

The monitor is a 2491 CRT with the added capability to operate on an open batch, search for a record and correct it.

The combined network may contain up to 48 industrial data collection stations, plus eight CRT keystations for monitoring or key entry. Other balances are possible, but the maximum configuration must not exceed 56 stations.

A combined system, including a 2409 processor with the necessary core memory; a disk capable of holding 28K records; eight keystations, any or all of which can be defined as monitors; one tape drive; the 44084 controller; interfaces for the processor and tape drive; four industrial work stations and four attendance stations would cost $2,400/mo including maintenance, the spokesman said.

While 4400 and 2409 stand-alone systems are available now, the controller will not be available until the second quarter of 1974.

Mohawk Data Sciences is at Box 362, 13503.

HP Package Emulates IBM 2780 Terminal

PALO ALTO, Calif. – Hewlett-Packard has introduced a software/hardware package for its HP 9600C/E measurement system that emulates an IBM 2780 data transmission terminal. The package allows the HP measurement system to communicate directly with an IBM 360/370 mainframe.

The HP 91780A Remote Data Transmission Subsystem (RDTS) package gives the mini-based measurement system access to the power of a larger computer for storage and large-scale calculations, an HP spokesman said.

Shared Peripherals

A measurement system with RDTS can handle its measurement work and remote-batch work concurrently, the spokesman added. The program allows line printers, card readers, magnetic tape units and paper tape readers to be shared between measurement and RJE work, he noted.

RDTS includes a choice of Ebcdic and Ascii code sets and operates with Btam, Tcam and Basp software.

Any HP 9600 disk-based or core-based measurement system using RTE-C or RTE software can be adapted to the RDTS package, the spokesman said.

The RDTS package costs $4,500 with delivery in 60 days from the firm at 1501 Page Mill Road, 94304.

10-Digit Display Transmits Limited Amounts of Data

BERWYN, Pa. – Mega Products Corp. has a terminal with a 10-digit display for applications needing limited amounts of data.

Mega's Model 10-9 is a visual display/data inquiry terminal with nine back-lit panels, a 16-character keyboard and an indicator light which informs the operator when the terminal is transmitting.

The unit's buffer allows transmission or reception of up to 48 characters. Paging permits review of selected fields.

The terminal costs about $300 in OEM quantities from the firm at P.O. Box 534, 622 Lancaster Ave., 19312.

Nato Network Operational

LONDON – The design and installation of the 3,000-mile computerized Nato air defense network is now operational throughout the Nato territory from above the Arctic Circle to Asia Minor.

Nadge (Nato Air Defense Ground Environment) involves a complex system of radars, computers and other electronic subsystems to make it possible to detect, identify and intercept intruding aircraft.

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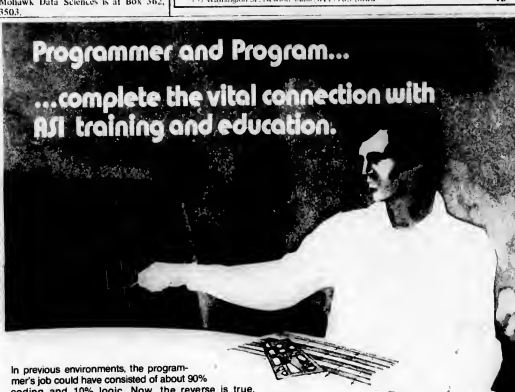

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Bits & Pieces

Table-Top Matrix Printer Compatible With Ascii Input

SHELTON, Conn. – The DMTP-1 is a table-top printer from Practical Automation, Inc. incorporating an impact dot matrix print technique compatible with Ascii input.

Printing is achieved by causing the print head to travel across the tape imprinting seven vertical needles in a five-space box to serially form the characters, numbers or symbols in the familiar 7 by 5 dot matrix.

The unit will print up to 24 char./line at a rate of one line/sec – maximum rate of 60 char./sec.

Cost of the unit is $645 from the firm at Trap Falls Road, 06484.

Low-Cost Mass Storage Available for PDP-11

SANTA ANA, Calif. – PDP-11 users can obtain a cartridge magnetic tape system with from one to six drives per subsystem from Applied Data Communications.

The controller is a quad PC board installed into the PDP-11 small peripheral controller slot and wired system unit.

Drives are cabled to this controller board with cartridge capacity up to 720K byte/track. Transfer rate is 48 kbit/sec with recording under the proposed Ansi standard tape format.

Price for a single-drive system is $3,150 for single track, and $3,450 for four track, from the firm at 1509 E. McFadden Ave., 92705.

Plotter Goes On-Line to PDP-11

LAFAYETTE, Calif. – The Zeta System 3600/11 digital plotter is designed specifically as an on-line system for the PDP-11.

The 3600/11 generates plots at speeds up to 4.5 to 6.2 inches with 2.5 mil accuracy. Four pens are standard in the 3600/11 with each pen able to plot across the full 34-in. drum width.

Total plotting area is 34 in. by 120 ft with use of standard roll-fed plotting paper.

Plots are generated from standard incremental plotting subroutines which employ a six-bit output command to produce length vectors in x, y and pen up/pen down movement.

Price for the digital plotter is $15,900 from Zeta Research, 1043 Stuart St., 94549.

AMS Working on 135 Add-On

SUNNYVALE, Calif. – Advanced Memory Systems, Inc. (AMS) reports it is currently completing development of add-on main memories for the IBM 370/135.

Deliveries of production systems to customers is expected to begin early in 1974.

At 1,500 Line/Min

1403 Substitute Packs More Char./Page

By Michael Weinstein
Of the CW Staff

MELVILLE, N.Y. – IBM 360/370 users can get more output per page with Potter Instrument Co.'s 6403 high-speed impact printer – code named "Grand Slam."

Designed as a direct replacement for the IBM 1403 printer, the Grand Slam uses a smaller typeface to print 11,220 char./page compared with 8,712 for the 1403, a spokesman said.

This results in a cost payoff for the user, he added, in decreased paper, duplicating and storage costs.

The Grand Slam prints on pages 10-5/8 in. by 8-1/2 in. – compared to 14-7/8 in. by 11 in. for the 1403. The smaller page size allows users to use standard filing cabinets to store computer printout.

Specifications

The Grand Slam prints at the rate of 1,500 line/min with 15 char./horizontal in. This compares to a rate of 1,100 line/min and 10 char./horizontal in. on the 1403, the spokesman said.

Lines per vertical inch are set at either eight or 10, which is the standard. This compares to either six or eight for the IBM 1403.

But a true comparison, the spokesman said, is 10 lines for the Potter unit compared to six for the IBM printer.

The rationale for comparing the best Potter figure against the lower IBM figure is that most IBM users do not use the eight-line capability, as lines printed in this manner by a 1403 tend to become packed too closely together, he said.

On a character vs. character basis, the Potter units print alphanumerics two-thirds the size of those output with a 1403.

The technological advance of the Grand Slam is incorporating print hammers packed tighter together which can still produce legible characters through six-part forms. The obstacle that had to be overcome is bleeding of characters on the latter forms. Because each character is closer to the next, any fading through copies would tend to run one character into the next and lead to illegibility.

Whence It Came

The Grand Slam (Model 6403) is identical in design and size to Potter's previously announced 3403 [CW, April 21, 1971] with the exception of the inclusion of the new belt chain and high energy hammers.

While this similarity indicates present 3403 users should have no problems field upgrading, a Potter spokesman said, "Engineers are looking at field upgrading and presently can see no problems; as yet we have not made the change and until such time we can make no positive statement on field upgrading."

In any case, the 6403 – like the 3403 – can be used either on- or off-line. An off-line operation is needs the support of a controller, 800- or 1,600 bit/in. tape drive and tape attachment. In the on-line mode the unit replaces an existing 1403, the spokesman said.

Three-year lease price for the Grand Slam is $1,250/mo. Purchase price is $54,950.

Delivery is 90 days from the firm at 532 Broad Hollow Road, 11746.

New RCA Technique Could Bring Bubble Memory Closer to Users

By a CW Staff Writer

NEW YORK – Bubble memories which would operate 100 times faster than conventional memories took a step closer to an end-user product with the announcement by RCA of a new chemical compound – bismuth thulium garnet – which facilitates optical readout with low-power light sources.

The bubble memory, conceived by Bell Labs, is an integrated circuit-like device in which data is stored as tiny magnetic cylinders or "bubbles."

Despite the viability of the concept, a stumbling block has been the need for high-powered light sources such as lasers for optical recognition techniques.

Looking Ahead

The significance of the new RCA chemical is that now light sources as low-powered as light-emitting diodes can be employed to read bubble memory data. This is possible as light interacts with the RCA compound 10 times more readily than with other garnets previously used for bubble memories, a spokesman said. A bubble device consists of a thin-film magnetic garnet or covering over a standard non-magnetic base.

When surrounded by the proper magnetic fields, the film can sustain extremely small areas of reverse magnetization, referred to as domains.

These domains appear as bubbles when the film is viewed through polarized light – hence, the term bubble memories. For computer applications the presence of a bubble would correspond to a logical one and the absence of a bubble to a logical zero.

To be sensed by magneto-resistive techniques – for example, whereby an arm measures a change in electrical flux as either it or the surface moves past – the bubbles must be enlarged nearly 100 times.

This requirement plus the size of the sensing device results in a substantial portion of the film "real estate" being used.

A better method of reading the bubbles is to use what is called the Faraday rotation effect which converts the domains to a visual pattern when the film is viewed in polarized light.

This is where the new film comes in. Previous light techniques were restricted by the need for a powerful light source to read the films. RCA's film compound allows light reading with a fraction of previously required light.

Although RCA has not completed the construction of a full bubble magnetic device using the new film various components have been turned over to the Air Force Avionics Laboratory for further assembly and development.

HP Minicomputers to Cost Less

CUPERTINO, Calif. – Hewlett-Packard is reducing prices for its computer memory by up to 60% which will lower system prices by an average of 10%.

Additionally, prices have been dropped for accessories with an offsetting increase in peripheral costs.

"The overall result for customers is that it will be significantly less expensive to purchase core memory products, less expensive to buy systems and slightly more expensive to buy stand-alone peripherals," a spokesman said.

"Under the new price schedule users can buy a 32K minicomputer for $5,000 more than the price of a 16K-word model. The previous price difference was $10,000," he noted.

In larger perspective, "previously, in moving from an 8K mini to a 32K mini, a user was faced with a three-to-one price increase." New prices make this move on the order of two-to-one.

An example of lower accessory prices is that floating point can be added to the HP-2100 system for $500 compared to $2,500 previously.

The price increase in the peripheral area is justified by HP as reflecting higher costs of components and materials used in manufacturing. An example of this increase is a 10% jump in price of the 7970 tape drive.

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The French Computer Caravan also has an excellent name as co-sponsor—*Zero-Un-Informatique*, a leading computer industry publisher of both a weekly newspaper and a monthly magazine. *Zero-Un-Informatique* will provide local identification and promotion, and will assure that La Caravane Informatique is responsive to the current needs of French computer users, with locally run forums, workshops and seminars.

If you're marketing in the rapidly growing French computer market or if you want to be—La Caravane Informatique is a selling tool you shouldn't pass up. Here's the schedule:

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March 5-7	Marseille	Palais de Congres
March 12-14	Bordeaux	Foire Internationale
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April 2-4	Nancy	Palais de Expositions

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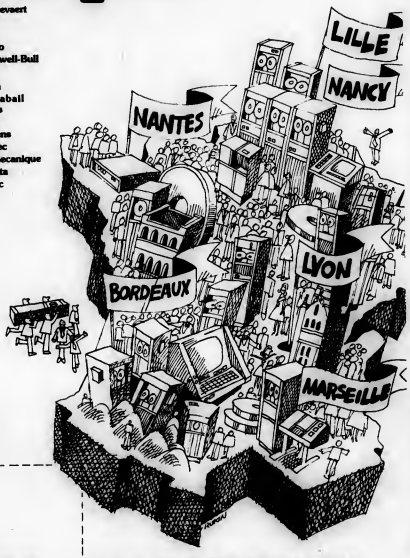

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For Some Users, Speed of COM Is 'Real Enough'

By Don Leavitt
Of the CW Staff

Conventional, batch-oriented applications have often produced such voluminous reports that they provide little real information to management. On-line inquiry systems based on CRT terminals get around that problem, but only at a cost – literally and figuratively – that may be more than the user can afford.

CRT-based systems may have more capabilities than the user really needs. If, for example, he needs the ability to inquire against a fairly static data base, and not to update that base dynamically, a system based on computer-output-microfilm (COM) may be a better choice, according to Tom L. Harrison, a systems analyst for General Mills.

The choice between CRTs and COM, Harrison wrote in a recent issue of the *Journal of Micrographics*, may finally come down to whether the user needs

CRT vs COM

real-time interaction with his system, or just "real-enough" time. If immediate updating isn't really needed and there is a large volume of information against which the user can inquire, a "management control system" keyed to COM may be a better choice than a management information system keyed to CRTs.

Yeas and Nays

There are advantages and disadvantages to both options, he admitted, and speed and flexibility of inquiry have to be considered as the prime assets of CRT devices. Data can be pulled from the data base, and added to it, on logical arguments rather than through reference to specific index numbers, as required by many microfilm retrieval operations.

CRTs are not without disadvantages, Harrison continued, and these drawbacks include a data base in dedicated storage for on-line inquiry/update, and the cost of the programming effort that must be expended for the information to be viable. In addition, the amount of data that can be displayed at any one time is limited on many CRT terminals, and the display itself is "characterized by jitter and drift," the author said.

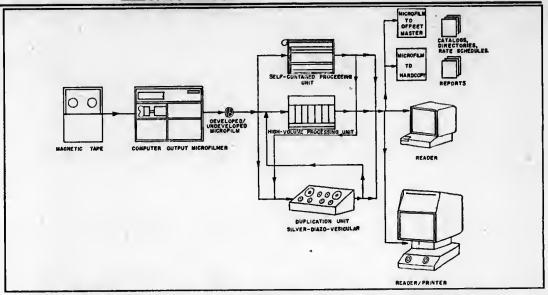
COM-based management control systems, on the other hand, are out-of-date with activities affecting the data base that have occurred since the most current batch-oriented generation of the microfilmed data. To compensate for this, presumably, more frequent batch runs might be advisable.

Size a Criterion

Harrison added that programming for many of the COM units is no different than programming for a print-tape destined for an off-line line printer operation. Beyond that, he said, if the user's business is large enough to require real-time or real-enough time systems to keep management posted, it probably should be at least considering optical character recognition (OCR) equipment to handle its input work.

The move to OCR would of course support the concept of more frequent batch updates, since it would avoid the conventional data preparation steps that previously forced longer processing cycles.

Costs are to be considered in choosing equipment, Harrison added. And in his view, CRTs may be purchased for from $10,000 to "hundreds of thousands" of dollars. COM systems have the same upper range "with all the bells and whistles" but start somewhat higher than CRTs, at about $25,000.



The "real-enough" time COM-based system may be more efficient for some users than a real-time CRT system.

Introducing "Scrooge-2"

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Add-On Expands 370/145 to 2M Char.

By Michael Weinstein
Of the CW Staff

CONCORD, Mass. – A new add-on unit from Cambridge Memories, Inc. can expand main memories of both models of IBM's 370/145 to 2M characters.

This expansion capability is expected to be most important to the more than 2,000 users of 370/145 Mod 1 processors, which are currently limited by IBM to expansion up to 512K bytes, according to a Cambridge spokesman. The 145 Model 2 is limited to 1M characters, he added.

Beyond that point, users are required to move to a different 145 processor series. The 370/Stor 145 from Cambridge provides an alternative to that forced upgrade, the spokesman said.

In addition to the expansion capability, the add-on memory is designed to have "distinct value added in terms of performance and operating features" when compared to equivalent memory from IBM, he noted.

A memory "protection technique automatically corrects all single-bit errors, detects more complicated ones and can isolate major memory failures." It also enables 370/Stor 145 memories to perform as back-up to IBM memory, "helping assure continued memory operation in the event of a major failure in IBM's resident memory," he added.

Another feature of the unit enables users to expand in either exact IBM-designated increments of 128K, 256K or 512K bytes or in other specified increments.

Additionally, 370/Stor 145 is "transparent" to the host processor – meaning it can interconnect directly to the Model 145 processor and accommodate all IBM hardware, software and maintenance without alteration. It is installed outside the main processor, in a free-standing cabinet with dimensions similar to those of an IBM 3345 unit.

Specifications

System speeds for the 370/Stor 145 are 237 nsec access time; 540 nsec read cycle time; and 607.5 nsec write cycle time.

The memory accommodates 8-byte words for read operations and 4-byte words for write operations using bipolar semiconductor memory circuitry – 1,024 bit/chip TTL. Expansion is from 112K to 2,048K bytes.

Prices vary with the amount of add-on memory, its level in the system and IBM resident memory levels, according to the spokesman, but "average prices are approximately 80% of IBM list price.

Deliveries are available immediately from the firm at 696 Virginia Road, 01742.

New OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users.

Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

Disk System Interfaces

HIS 316/516 Mini Systems

SUNNYVALE, Calif. – A 3,600 rpm disk memory system for Honeywell 316/516 minicomputers with five storage levels ranging from 32K to 524K words is available from Data Disc, Inc.

Average access time of the Model 1747 is 8.4 msec; average data transfer rate is selectable at time of purchase in four increments from 8- to 64 msec/word.

The disk interconnects with the HIS computer on either the I/O bus or the DMC channel. Track advance is automatic, permitting variable length records. Records may vary in length between one sector and 2^{15} sectors; each sector contains 16 data words.

Hardware consists of a 7230-L series disk memory and power supply and four interface cards mounted on a module which plugs into the computer. The 1747 is software-compatible with all HIS-developed software, a spokesman said.

The unit is priced at $7,600 from the firm at 686 W. Maude Ave., 94086.

Naked Mini Expanded

IRVINE, Calif. – Users of Computer Automation's Naked Mini/LSI and Alpha/LSI minicomputers can now expand memory with 16K-word (16-bit word) boards at about two-thirds the cost of the previously available 8K-word boards.

The new 16K words on a single printed circuit board expands the capacity of the standard 5-slot Alpha/LSI from 32K words, using 8K modules, to 56K words – including 8K of core mounted directly to the processor board.

Cycle time for the new memory is 1.2 μsec, giving the user a DMA transfer rate of 833 kword/sec standard, and 1,429 kword/sec with interleaving, a spokesman said.

An Alpha/LSI equipped with the 16K module is priced at $3,990 for a single unit. This corresponds to a price of $1,990 for the standard Alpha/LSI with 4K-word memory.

Deliveries are set for the first of 1974 with volume discounts available from the firm at 18651 Von Karman, 92664.

Lockheed Has Multi-Use Memories

LOS ANGELES – A family of planar-arrayed core memory systems available as modules-only, modules with chassis, or modules integrated into a chassis with power supply has been announced by Lockheed Electronics Co., Inc.

Magnetics modules can be obtained in 4K-, 8K-, or 16K-word by 18-bit configurations, a spokesman said. Systems can be implemented from 4K to 256K words in bit lengths ranging from 18- to 72 bit/word, he added.

Cycle times for the field-expandable Sentinel system range from 650- to 750 nsec. Standard TTL-compatible interface provides data outputs ranging from 300- to 350 nsec.

Typical systems consist of a timing module and associated magnetics modules with chassis and power supply.

The timing module will drive up to 16 magnetics modules with all modules completely interchangeable with either the 5-1/4 in. or 14 in. Retma chassis – from six to 20 modules can be housed in these chassis.

The memory series features 18 mil lithium ferrite tape process core, temperature compensation on each magnetics module, self-contained cooling and byte control.

Price is less than one cent/bit in OEM quantities from the firm at 6201 E. Randolph St., 90040.

batch processing machine. We have formally designated this service as TS/RJE. Informally, we call it "Scrooge-2," for the way it carefully squeezes every dime you give it.

In Scrooge, the most comprehensive operating system, OS, can be automatically used for execution of batch programs that were developed under the language-compatible CP/CMS time-sharing system.

Its prime benefit is running work in the batch environment which you would normally run in the time-sharing environment. In the past, it has been too much trouble to remove it from the time-sharing machine. By using Scrooge, you'll release your time-sharing equipment for more appropriate time-sharing work, yet get appropriately fast turnaround times on the batch work.

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(3) You can hook up your own batch-processing 360 to our time-sharing 360/67. You'll get time-sharing response on these priority development jobs, while maintaining a cost-effective operational level.

(4) You can use Scrooge for program development, getting as much as a four-to-one reduction in program development cost.

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Smugglers Beware! 'Tecs' System Checks All at Airports, Borders

By Marvin Smallheiser
CW West Coast Bureau

LOS ANGELES – An extensive on-line system is helping the U.S. Customs Service uncover smugglers.

Using two Burroughs 5500 dual processors in a shared disk mode with 480 terminals, the Treasury Enforcement Communication System (Tecs) is operating at border checkpoints and at seven major international airports throughout the country.

David Bulman, chief of the systems support branch for the Law Enforcement Data Processing Division of the Customs Service, said plans call for expansion to all major airports as funds become available.

As part of Tecs, the license plate number of every car passing through a checkpoint along the Canadian and Mexican borders is entered into an ASR 33 or 35 teletypewriter.

Almost instantaneously, a printout from a master data bank in San Diego informs the inspector whether there is a record on the car or if the car owner is wanted.

In some cases, the printout will say if the occupants are armed and dangerous.

If the response warrants further investigation, the motorist is directed to a secondary inspection area where another teletypewriter can get a full record regarding the car and its possible use in smuggling.

Tecs is also used at seven airports – San Francisco, Chicago, Washington, Philadelphia, Dallas, New Orleans and Los Angeles. It is handling 55,000 queries a week from the airports.

As persons move through customs lines, inspectors punch in their names on teletypewriters to check them against those of suspected smugglers.

If a similarity is found, a description is printed out and the traveler may be diverted to a secondary inspection area for search or questioning.

Behind the Scenes

Each of the 5500s can handle 256 communications lines and uses a Burroughs Data Communications Processor, an interface which is actually designed for the Burroughs 6700.

Of the 480 terminals now out in the field all but 60-70 are teletypewriters. The rest are CRTs used with the airport program.

Plans call for a specially designed teletypewriter-compatible terminal by Frederick Electronics of Frederick, Md., for the border checks. It has a keyboard with 16-character display and 64-character buffer.

Because of the large number of communications lines required for the system, expansion of the airport system has been deferred for lack of computer capability.

However, it is possible that the system will be expanded to computerize the books checked by the Immigration and Naturalization Service to detect persons trying to enter the country illegally.

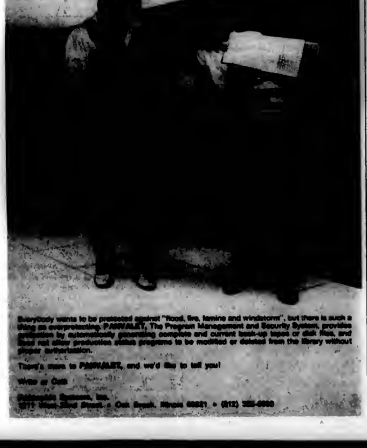
Software for the system is in Algol.

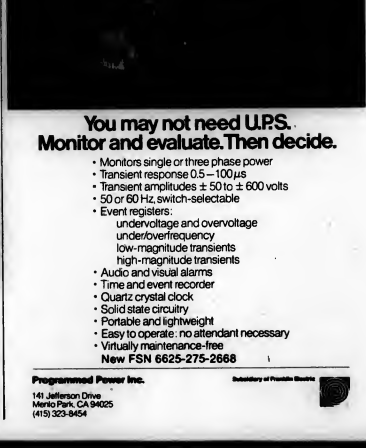
"People working here believe Algol is a good language and they are able to use it very effectively," David Brown, systems programmer, said.

The Burroughs 5500s, he said, are powerful but small "and can do things we want because they are well-designed."

Bulman said although the computers in San Diego are operating seven days a week, up time is 98.6%.

Plans for enlarging the computer capacity, Bulman said, may involve a mini-computer configuration to handle the license plate application to relieve the Burroughs machines.





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Group Planning Symposium

TI Users Form Information Exchange

HOUSTON – Texas Instruments has created a user's group for its minicomputer users.

Called Texas Instruments Minicomputer Information Exchange (TI-MIX), the organization's purpose is to provide "a forum for users to exchange TI minicomputer software and hardware applications information between themselves and TI, and to encourage communications for influencing future computer technology," the firm stated.

A committee of TI users met in Houston Oct. 3-5, drafted bylaws for the organization and named temporary officers. TI-MIX will be officially formed and officers installed at a symposium tentatively planned for December here.

Dr. A. O. Bishop of the University of Tennessee was chosen chairman of the group at the October meeting, and George Harrington of Union Carbide was chosen vice-chairman.

Floyd Burton, TI-MIX's staff director, said he expects the group to have 300 members by the end of this year.

Burton said the user group would offer free exchange of software, tested by volunteer members, with only a reproduction charge.

The group's main influence with TI products and policy will probably be in exchanges with TI engineers at the symposiums, he said.

Societies/ User Groups

TDCC Shows Carrier System

WASHINGTON, D.C. – The Transportation Data Coordinating Committee's (TDCC) Fifth National Forum and Exhibit to be held Dec. 4-5, will focus on "transportation data systems," with a primary theme of means of interfacing shipper/carrier data systems.

Topics to be discussed include tariff improvement features, standard coding and formats for data transmission, and shippers' and carriers' reporting systems. Plans are being made to present demonstrations of current working systems of shipper/carrier computer-to-computer information exchange.

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Calendar

Nov. 12-14, San Diego, Calif. – 44th National ORSA Meeting. Contact: J.V.J. Ravenis II, P.O. Box 20673, 92120.

Nov. 14-16, Washington, D.C. – Public Utility Information Systems Conference. Contact: Arthur Schintzel, American Gas Association, 1515 Wilson Blvd., Arlington, Va. 22209.

Nov. 15, Washington, D.C. – Inspection and Quality Control of Microfilm, sponsored by the National Microfilm Association. Contact: NMA, Seminar Registration Desk, 8728 Colesville Road, Silver Spring, Md. 20910.

Nov. 19-21, Philadelphia – Eastern Regional Operations & Automation Workshop. Contact: Judith Martin, Operations and Automation Division, American Bankers Association, 1120 Connecticut Ave., N.W., Washington, D.C. 20036.

Nov. 26-27, New York – Senior Management and the Data Processing Function. Contact: The Conference Board, 845 Third Ave., New York 10022.

Nov. 27-29, Harrisburg, Pa. – Fifth Annual ADP Symposium. Contact: Navy Ships Parts Control Center (710), Mechanicsburg, Pa. 17055.

Nov. 27-30, San Francisco – 12th Annual Fall Symposium of the Digital Equipment Computer Users Society. Contact: Maryann Oskirko, Digital Equipment Corp., Maynard, Mass. 01754.

Dec. 1, Los Angeles – Southern California Joint Applied Mathematics Meeting. Contact: E.W. Ng, Jet Propulsion Lab, California Institute of Technology, Pasadena, Calif. 91103.

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Third-Party Leasing -- Part III

Don't Forget 'Little' Items: Taxes, Insurance, Freight

By Thomas E. McCormick
Special to Computerworld

Leasing some computer equipment from a third party can cost less than leasing directly from the manufacturer, but the user must take an active role in specifying what the lessor's responsibilities are.

Take those "little" items like taxes and insurance.

First, specify that the lessor must pay all taxes and insurance; this applies to preinstallation shipping, while the equipment is installed, and to post-installation shipping. If possible, the user should permit only the use tax to be passed on. If the lease includes maintenance, use tax charges on the maintenance portion should be excluded unless the state allows this; if necessary, two invoices and two contracts should be required.

Standard contracts usually make the lessee responsible for damage to equipment from war, insurrection, nuclear radiation, etc., excepting normal wear and tear.

Investment Tax Credits

The lessee should specify who is to receive the investment tax credits and purchase options. If they are applicable, and the lessee does not want them, he should try to get some concessions for them.

The lessee must specify manufacturer preferred and all substitutes which he will accept. He must be sure to clearly specify model numbers, also, and include enough description to prevent accidental or deliberate substitution of less desirable goods.

Maintenance contract coverage hours desired on a call-up basis must be noted, likewise the frequency of preventive maintenance desired and maximum response time acceptable. Servicemen should be local or they must be able to come promptly. This is admittedly a very difficult area to enforce whether lessee's maintenance contract is separate or not. But one should try for these provisions anyway. At the very least, a statement of normal practices by the maintenance people is desirable.

Lessor must be required to be responsible for including all items necessary for the system to operate; this relates to required items only, of course, not to options. If any required specifications have been overlooked by the customer, lessor should add them to his proposal and quote on them, including no-charge items.

This puts the burden on the lessor to carefully review specifications for missing requirements. It eliminates that as an excuse on his part for inoperable equipment.

The lease must specify lessee's right to alter the machines, provided:

- No patent is infringed upon.
- Any such alteration be restored to manufacturer's then current engineering specifications upon contract termination.

This allows for possible use of cost-saving technological improvements from any source, including those competitive with lessor.

Lessee can specify different number of months' term for various machines or features if he desires; items may be leased for varying numbers of months. Items will likely have different economical lives within the same lease. For those with terms less than the full term, lessee should retain the privilege of continuing to lease them beyond their individual terms. This can be addressed in a general clause for automatically extending the contract.

Upgrade and downgrade provisions must be specified, including prices for upgrades, and penalties, if any, for downgrades.

It is important to be cautious about treating software exactly as hardware within a contract; a separate schedule and terms may be desirable.

The lessor should be required to pay all freight charges inbound, including, if possible, rigging and movement of machines from loading dock into machine room. Lessor will want to be sure elevators, hallways and doorways will permit normal delivery; if they do not, user should expect to pay the difference.

The user usually pays outbound freight; but to where? He must say that outbound freight will be paid for shipment to lessor's nearest office, or some nearer location requested by lessor.

If possible, lessor must be required to furnish packing crates and materials; this avoids user liability should defective crates permit damage in shipping.

User must require that lessor pay all costs of making the system operable onsite. This means that in addition to each machine functioning properly alone, the equipment maintenance people must be able to get all of the machines and features to function together.

Sometimes there may be rough handling in shipment. Sometimes the quality of maintenance was low at the previous location. Whatever the problems, the lessor should be held responsible for the costs of fixing them to the satisfaction of both the maintenance people and the customer. This is more important than providing refurbishing before machines are sent to the user. That is also desirable, however, if for nothing more than cosmetic reasons.

Servicing Groups

It is not unusual for two or more servicing organizations to be involved with installing and maintaining a customer's computer. Disagreements between them occasionally happen. Each feels the other's equipment is defective, and a standoff occurs. The leasing contract should make the lessor responsible for reconciling such a problem at installation and deinstallation time.

If he is unable to do this, then the non-delivery penalties and possible contract termination should become effective. If such disagreements between servicing organizations occur after installation, and if customer alone or together with lessor cannot resolve them within some reasonable period such as 48 hours, then lease payments should be suspended.

Part IV will discuss quiet possession, performance level guarantees, cancellation during initial terms and other items to be considered in writing contracts.

Thomas E. McCormick spent several years with IBM as a sales representative before becoming director of computer operations at the Seidman & Seidman National Computer Center.

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COMPUTER INDUSTRY

CI Notes

12 Bids In for Teale

CW West Coast Bureau

LOS ANGELES – Twelve companies have submitted full or partial proposals for the state's Stephen P. Teale Consolidated Computer Center.

The bidders include: Advanced Computer Typography, Inc., MTST conversion; Boeing Computer Services, training; Cambridge Memories, Inc., memories; Control Data Corp., total system; Data 100 Corp., satellite miniprocessors; and GTE Information Systems, Inc., terminals and conversion.

Others are: IBM, total system; Itel Corp., disk drives; Sanders Data Systems, Inc., terminals; Storage Technology Corp., tape and disk drives; Telex Computer Products, Inc., hardware, software, memory, tape and disk drives; and Univac, total system.

The state is expected to spend the next several weeks selecting one or putting together several of the proposals. Contract signing is scheduled Dec. 15.

Scan Data to Enter Key-to-Disk

SANTA ANA, Calif. – With a contract for Pertec Corp. shared processors, Scan Data Corp. is expected to announce its entry into the key-to-disk market. The unit will be available either as key-to-disk or as mixed media, with optical character recognition.

The two firms signed a contract for Pertec equipment valued at over $1 million during the initial 18 months which includes a minicomputer developed by Pertec.

Supershorts

Diablo Systems, Inc. has opened a sales office, Diablo Systems, GbmH, in Munich, Germany.

Shugart Associates has signed agreements with International Trading Corp. and Electro Marketing Corp. to distribute the company's IBM-compatible diskette storage drives in Europe and Asia.

– – –

Ampex Corp. has been awarded a contract to supply the U.S. Government with a second trillion-bit capacity on-line mass storage system.

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The Singer Co. has purchased Keane Associates, Inc.'s System/4 installed product base and marketing rights in the northeastern U.S. for $1.6 million.

– – –

Approximately 60% of the total exhibit space available for the 1974 International Computer Exposition for Latin America has already been reserved by 1973 exhibitors.

Whale-Shark Syndrome Cited

U.S. IBM Plan Turns Off Mainframers

By E. Drake Lundell Jr.
CW Washington Bureau

WASHINGTON, D.C. – One of the reasons forcing the unprecedented action by four mainframe companies in filing a joint memorandum with the Justice Department in the IBM case [CW, Nov. 7] is their clear distaste for the relief proposal suggested by the government a year ago.

At that time the department said if its suit against IBM was successful, it would ask the court to divide IBM into "several discrete" new companies that offered a full line of products.

The group's filing, however, offered jointly by Control Data, Honeywell, NCR and Univac to the department, indicated the four felt the government's breakup plan was "fraught with substantial risks and difficulties."

Because of this, the group has asked the department to set aside the issue of ultimate relief in the case until after the trial has been completed and then to sound out industry on the best means of dismembering IBM in light of the conditions as they exist after the case is over.

While the four agreed IBM should be broken up in some fashion – they did not spell out exactly how in the memorandum – they clearly do not relish facing between five and eight "mini-IBMs" if the government is successful in its suit.

Aesop's Fables

Several industry sources have called this the "whale and shark" syndrome of the mainframe makers, explaining they would rather be in a tank with one large slow whale than in with a half-dozen hungry sharks.

The fear of the mainframers, sources said, is that the resulting "mini-IBMs" would be much stronger competitors in the mainframe market than IBM is now and that they would not be hampered by worries over possible antitrust violations as the company is now.

In their filing with Justice, the four said that "assuming that the feasibility problems involving plant-splitting and the use of foreign-located assets can be overcome, the risk of economic waste by way of transitional costs and the risks of creating a shared monopoly remain," if the government breakup plan were adopted.

"Substantial transitional costs are necessarily involved," the group said.

"Among the more obvious are the economic wastes inherent in dividing basic research and developmental work in progress, transferring production and allocating successor responsibilities regarding support of IBM equipment in the field."

In addition, they indicated there would be a "slowup in the market as users hold up their procurement decisions until there is less uncertainty as to the new structure of the industry.

"Such a slowup, aggravated by the continuing IBM de facto standards, would probably involve a freeze on technological progress to the detriment of computer users, and hence the public," the group predicted.

This would "adversely affect all of the firms in the industry and especially the non-IBM companies because they lack the cash flow from an extensive lease base to sustain them during the transitional years."

Analysis

But even with these problems, the four saw the most disastrous result coming with the market power of the successor firms.

The government's plan would most likely "leave the IBM successor firms as the dominating firms" in the industry, the group said.

The successor companies "will be substantially larger than the non-IBM mainframe companies and will have the further advantage, which could prove decisive, of a very sizeable lease base coupled with a compatible product line among themselves," the memo stated.

"With a head start," it went on, "from size and lease base, and sheltered by systems/data base compatibility barriers and other aspects of the 'technological lock-in,' the successor IBM companies might well succeed not only to the assets of IBM but also to its predominance in the industry.

"Converting single-firm dominance to shared monopoly power is not, in our view, of sufficient public benefit to offset the substantial transitional costs of dismemberment and the risk that users will lose the innovative, product differentiation and other competitive benefits now being provided by the non-IBM mainframe companies," the group concluded.

Lessors Group Sees Possible Move Into 360 Software and Service

CW Washington Bureau

WASHINGTON, D.C. – There is a growing move under way within the Computer Lessors Association (CLA) for the group to set up a nationwide field engineering service and a software support group to serve association members. Particular emphasis would be placed on the 360 inventory of equipment.

It is understood that CLA's board feels it should definitely move into one or the other of these areas, but the membership will determine how far or fast to move at a meeting Dec. 4.

Vital to Users

The move is particularly important in the area of programming and systems support, one source close to the organization said, since these will be important items in users' minds as IBM increasingly deemphasizes support of the 360 line of equipment.

"I don't think any one company acting alone can offer the full range of software support that users will need as IBM withdraws from the field," this source said, "so it will have to be a joint effort or some type of jointly funded program."

Basically, this type of support would include maintaining operating systems for the 360 line.

In addition, a joint software program could also offer lessees future improvements to their operating systems to continue to keep the 360 a viable competitor with the IBM 370 line, the sources indicated.

The other major area under active consideration by the group is field engineering support for its members, but it is not clear how far this move might go.

For example, it is unknown if the computer lessors would set up a nationwide network of field engineering personnel to service all the field engineering needs of member companies.

Installation Help

What is more likely, however, is a skeleton-type group to help in installing and moving leasing company computers from one user to another. It would also trouble-shoot particular problems and work with the IBM field engineers in overcoming specific user worries and problems.

The association is also considering an independent or semi-independent performance monitoring group that would further more efficient and effective use of 360 equipment – and thereby make it more competitive with the 370 line.

The members of the group pushing for such services see them as the best possible move by the group in supporting the inventory of 360 equipment in the field and making it viable until the Future Systems are unveiled by IBM in 1975 or 1976.

Most of the companies have to keep the equipment in use at least that long in order to realize profits on their investments in the 360 line.

The cost of remote batch processing just became news.

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ANNUAL CDP EXAMINATION

SCHEDULED FOR FEBRUARY 16, 1974

The next examination for the "Certificate in Data Processing" will be held on February 16, 1974, at selected college and university test centers throughout the United States and Canada.

Objectives of the CDP Program, inaugurated by DPMA in 1960, are:

To establish high standards for data processing personnel by emphasizing a broad educational framework and practical knowledge in the field as desirable personal objectives.

To develop a generally accepted examination program which will measure knowledge and experience appropriate to data processing and information management.

To establish a method for recognizing a corps of individuals having knowledge considered important to data processing and information management.

To lay a firm foundation for the continued growth of the computer based information systems field and for personnel within the field seeking to attain a position of leadership.

Specific requirements for this year's examination are detailed in the "Certificate in Data Processing Examination Announcement and Study Guide—1974." The study guide and the necessary application form are available from DPMA International Headquarters, and from DPMA Chapters across the U.S. and Canada. Deadline for filing the application is NOVEMBER 1, 1973.

application deadline date extended to December 1, 1973

Please forward the "Certificate in Data Processing Examination Announcement and Study Guide" along with application and test site list.

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Adapso Suit Claims Home Loan Banks' DP Services Illegal

CW Washington Bureau

WASHINGTON, D.C.—The Federal Home Loan Bank Board here has been named as a defendant along with a Cincinnati bank in a suit filed by the Association of Data Processing Service Organizations (Adapso) charging that home loan banks are violating the Home Loan Bank Act by offering computer services.

The suit is part of a continuing effort on the part of Adapso to keep banks out of the computer services industry.

Noting that federal home loan banks were exempt from taxation, Adapso charged this exemption "constitutes a form of unfair competition."

In addition, the suit charged that under the home loan bank act such institutions are barred from participating in non-banking commercial activities, which are being violated by the operation of a computer service center.

Specifically, the complaint, which was filed by Adapso and one of its members, United Data Processing, charged that the services offered by the Federal Home Loan Bank of Cincinnati were approved by the Federal Home Loan Bank board here. The suit was filed in Federal district court in Cincinnati.

The suit charged that "the data processing services of defendant bank are being operated at a loss. To that extent, the illegal data processing services are being subsidized by income from the lawful activities of defendant bank."

The suit seeks a ruling that would find the authorization for such services to be illegal.

In addition, it seeks a permanent injunction prohibiting the bank from offering such services and another that would prohibit the board from authorizing banks to participate in DP services.

Contracts

Interdata, Inc. has received a contract from Datran for dual-processor New Series Model 55 data communications concentrators, related software and technical support.

Data Products Corp. has been awarded a contract from Siemens AG, West Germany, for its core memory, the Mini-Store. The memory will be used in Siemens' Model 330 computer.

Distronics Corp. has received a contract from Refrigeration Equipment Co. to provide shared management information services.

Chi Corp, has received a contract from the U.S. Naval Weapons Center for the installation of its Programmable Display System.

Correction

Dier Computer Corp. has been awarded a contract by the Australian Government's Department of Health to supply 2.6M bytes of main memory to use on the department's two 360/65s.

Who can sell computers in Japan?

In Japenese it's called **Shukan Computer.** In English, it means **"Computer Weekly".** Whatever you call it, it's an excellent vehicle for marketing EDP products and services to the second largest EDP market in the world (and the fastest growing).

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Plug-Compatibles in Japan Set to Soar

By a CW Staff Writer

NEWTON, Mass. – The plug-compatible peripheral market in Japan appears to be poised for take-off, according to a report published in *EDP Japan Report (EDPJR)*.

The Japanese market today is comparable to the U.S. market around 1968, the report said.

All plug-compatible peripherals available in Japan are manufactured abroad and imported by trading houses.

At present, according to the report, five trading houses are selling magnetic tape disk equipment, the only types of plug-compatible machines to appear in Japan so far.

As of July 1973, a total of 18 units of IBM-compatible magnetic tape systems had been delivered to Japan, the report indicated.

To date, Memorex has sold only tape equipment and Potter instrument only disk equipment in Japan, while Storage Technology, Mohawk Data Sciences and Calcomp have exported both types of machines.

The *EDPJR* survey also indicated that eight U.S. firms have started exporting plug-compatible machines such as line printers, add-on memory and floppy disks to Japan. These manufacturers include Telex, Data Products, Memorex, Computer Investors Group, Electronic Memories & Magnetics and Advanced Memory Systems.

Innovex and Intelligent Memory Systems are also exporting, the report said.

Japanese manufacturers and importers, the report said, have previously shown a tendency to watch the marketing activity of pioneer firms in the beginning, and then enter into the sales race in rapid succession once the marketplace proves viable.

IBM, however, the report continued, is not taking all this competition lying down. It has retaliated by curtailing prices, enforcing fixed-term and extended-term lease plans, and shortening delivery time to users who seem inclined to adopt plug-compatible peripherals.

In further moves to combat competition, IBM-Japan has marketed new products and enlarged the functions of its machines.

But the Japanese market is only about one-twentieth the size of the U.S. market, and IBM's market share is about one-half of that in the U.S.

Despite IBM's fighting attitude, the future of plug-compatible peripherals in Japan is favorable, the report said. This prediction is based on several factors including the growth rate of the Japanese market. Computers used in Japan are increasing by over 25% a year, the report noted.

In addition, Japanese IBM installations are employing 370/145, 158 and 168 systems which use many magnetic tape and magnetic disk units.

How to Do It in Japan

MOORESTOWN, N.J. – Okidata Corp. has published a "how-to" pamphlet for businessmen interested in understanding the Japanese data processing marketplace and doing business there.

The booklet briefly outlines customs, business practices and details of the country's economy.

The pamphlet is available from Okidata Corp., 111 Gaither Drive, 08057.

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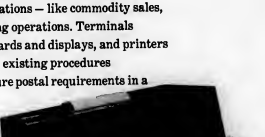

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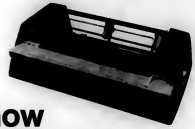

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Anderson Jacobson Gears Up Operations To Reach OEM Market

By Molly Upton
Of the CW Staff

SUNNYVALE, Calif. — Anderson Jacobson, which markets its acoustic couplers, keyboard terminals and modems to the end user, is ready to take on some OEM business, according to Richard J. Indermill, treasurer and secretary.

Richard J. Indermill

Currently the firm is developing a cassette recorder unit, has hired an OEM sales manager and is gearing up to sell its thermal printer and cassette unit to the OEM market.

Anderson Jacobson would like to manufacture CRTs, preferably through the acquisition of a small manufacturer with its own management, Indermill said.

The communications market, including terminals, is expanding rapidly, and the firm has seen a trend for businesses to centralize their DP operations, creating a need for "in-house" or in-company termi-

Cruz Sante Ana assembles Adac 242 modems.

nals, he said.

When Anderson Jacobson started making terminals, the market consisted primarily of businesses using a terminal to access an outside time-sharing service or service bureau, he said.

With the centralization of DP centers, there has to be more of a demand for preprocessed information, he noted.

"There's a lot to be done in the intelligent terminal market," Indermill said.

AJ Model 360 thermal printer undergoes testing for print head. When fully assembled, the units are run for 97 hours.

The new cassette recorder will have editing and searching capabilities, along with a 1,200 bit/sec modem, he said.

Currently Anderson Jacobson offers a cassette recorder which it obtains from another manufacturer.

However, the firm is experiencing delays in obtaining read only memories (ROMs)

(Continued on Page 37)

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In-House Service Staff

Talcott's Success Laid to Its Support

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK — Conservative accounting, service and computer expertise have helped Talcott Computer Leasing avoid most of the pitfalls that have trapped other members of the computer leasing fraternity, according to Truman Rice, president.

At the same time, however, Rice indicated the rest of the leasing firms had learned the importance of service over the past few years of large write-offs and investor skittishness.

'New Breed'

There is a "new breed" of executive running most of the leasing companies today who is more computer-oriented than most of the people who started out in computer leasing who generally were financially oriented, he observed.

"The new group running the show in leasing today is both more computer-oriented and more marketing-minded," Rice said.

Talcott, as a 115-year-old financial services organization, had never been in business for the short-term gain, he said, and so adopted a very conservative depreciation scheme for computer purchases from the start.

"This allowed other companies to show more profits early in the 360 leasing days," he admitted, "but it avoided the problems that many lessors have gone through writing down their inventories in line with the shorter allowable depreciation rates set last year by the major accounting firms."

For example, while most of the industry had been depreciating equipment over a 10- to 15-year life span in the early days, Talcott had adopted a five- to eight-year depreciation life cycle for its equipment, he said.

Talcott has always had a technical committee to pass on equipment acquisitions and evaluate the technical merits of planned purchases.

This committee has helped the firm keep a good mix of equipment and has required the firm to invest mainly in the larger end of the 360 line, with most of its 360 inventory in Model 50s and 65s, he said.

The relatively small size of the Talcott 360 inventory ($60 million) was planned from the beginning, because the firm felt any larger inventories would be unmanageable and a larger inventory could cause more marketing problems than it would be worth, Rice said.

Talcott also carefully planned the end-user markets it wanted to penetrate, concentrating on growth areas such as retailing, banking and publishing.

This plan enabled its systems support group to develop specific application packages for these areas and to build up an expertise in them.

Because of this, he noted, almost half of Talcott's inventory had "filtered down" within an industry. As one company outgrew its computer system, Talcott was able to place it with another company in the same end-user market with a minimum of new programming and work, he said.

The recession also helped Talcott and the industry, he said, since it forced the leasing community to "grow up" and it proved to users that "leasing company computers worked fine and that they were a way to cut costs in tight times."

But the major "secret" of Talcott's success, Rice indicated, has been its service and support, noting that Talcott was one of the first of the leasing companies to have a field engineering staff and a systems engineering staff in-house.

The field engineering support group handles all installation and deinstallation for the firm's customers, he said, and serves as an interface to the IBM field engineering staff for the user.

The systems engineering group, he said, develops software support and applications assistance.

"We try to offer full support just like IBM," he said, "so the first-time user can look at us just like he would any mainframe supplier and be assured of a full range of support."

Another service offered by Talcott for its users is performance monitoring, Rice said, in order to recommend system changes to increase the system's performance.

AJ Gears Up for OEMs

(Continued from Page 36)

from the semiconductor houses. It is especially difficult with new products, he said, as some prototypes must be put in the field and tested to ensure that the ROMs are of the correct design.

Then an order is placed for the units, and the wait begins, he said. In the prototype units, AJ uses programmable ROMs, and after testing submits the production order.

There is a move toward dedicated terminals, and putting memory on the cassette recorder could be the first step, he observed.

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Data 100 to Buy CCI?

MINNEAPOLIS — Data 100 Corp. has offered to purchase an 81% interest in Computer Communications, Inc. (CCI), which filed a Chapter XI petition in August.

Under terms of the proposal, Data 100 would offer 40,000 shares of its common stock, plus a small amount of cash, to creditors of CCI.

CCI makes a communications controller device which enables a central computer to communicate simultaneously with a number of remote batch terminals.

At an Oct. 24 court hearing, CCI's unsecured creditors rejected Syn-Tech Corp.'s plan of arrangement in order to consider alternate plans.

CCI treasurer Eugene M. Guffan said the cash position of the firm has improved since the beginning of reorganization proceedings, enabling CCI to continue normal operations.

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Pertec Sees Big Things for Its Floppy

CW West Coast Bureau

LOS ANGELES – Pertec Corp.'s new floppy disk, shown at its recent annual meeting, "will succeed big" in the marketplace, according to President Ryal R. Poppa.

Poppa said Pertec "is betting a lot of money" on the floppy disk, which he said is the smallest in the marketplace.

The disk will enter the marketplace about the second quarter of 1974, following several other new products Poppa claimed would be introduced in January.

He told stockholders of the company's development of a shared processor, CRT terminal and a new 300 line/min printer.

The growing minicomputer market, he said, will be a big market for Pertec peripherals.

Poppa was not concerned about the possibility of minicomputer firms making their peripherals in-house.

"If we lose one, we add 20 new customers," he remarked.

Poppa said revenues for the first quarter ended Sept. 30 increased but "operating earnings, as anticipated, were lower."

Revenues for the first quarter were $7.9 million, compared with $5.9 million for the same period a year ago. Net income was $458,000 or 15 cents a share, of which $206,000 was from an income tax benefit, compared with $454,000 or 15 cents a share a year ago.

Poppa attributed the decline in earnings to product development and said it was about 13% of spending.

Who Will Make Financial Rules -- Government or Private Sector?

NEW YORK – The accounting profession and corporate management are witnessing many changes concerning preparation of financial reports.

One of the real questions emerging is which sector "calls the shots" – the government, in the form of the Securities and Exchange Commission, or the private sector, represented by the newly formed Financial Accounting Standards Board.

This, plus accounting changes and effects, was one topic discussed during a two-day seminar here on Current Developments in Financial Reporting sponsored by the American Management Research International, Inc.

The issue of public or private administration of standards is also being discussed by members of the DP profession.

The SEC deals with day-to-day enforcement of accounting standards. But "the private sector has to a great extent abdicated enforcement of standards to the government. The body that enforces cannot help but set the standards," observed William C. Foster, associate professor of accounting at New York University.

Indeed, the SEC has gone so far as to change ground rules retroactively, concerning the acquisition of treasury stock for pooling purposes. Because of a significant outcry, it has withdrawn this ruling and is now asking for opinions, but it has "jumped the gun" on the Financial Accounting Standards Board (FASB), Foster noted.

In another area, the SEC has called for (Accounting Series Release 33-5401) disclosure of the effect on income if leases are capitalized.

Kenneth P. Johnson, national director of accounting, auditing and SEC services for Coopers & Lybrand, noted that the financial reporting community is about to see "a significant change in direction."

After describing the FASB's processes for implementing changes, which allow for discussion and then revisions, board member Arthur Litke said: "We recognize people may find fault with the deliberative process, but we can act quickly."

A move which could affect many computer firms is the FASB's proposal to change, as of Nov. 30, the disclosure method of foreign currency evaluations.

The proposal calls for companies to specify in annual reports their method of applying exchange rates, either current or historical, and of handling the gains and losses.

Firms would also be required to disclose the gains and losses incurred in the period, the amounts showing up in current earnings and the amounts deferred.

Johnson indicated there are real implementation problems in preparing reports disclosing alternative income that could result if leases were capitalized and amortized against income in past periods. "Many people don't have this information," he said.

Foster warned against "pollution of disclosure," and stressed that information should be relevant to the investor.

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'No Parts Problems'

DEC Scores Best 1st Period; Backlog Up

By a CW Staff Writer

BOSTON – Digital Equipment Corp. scored a record first quarter with earnings of $6.5 million in the period ended Sept. 29, and President Kenneth H. Olsen predicted each quarter this year will be progressively better. Shipments for all products accelerated during the quarter, the firm noted.

On revenues of $81.5 million, compared with $51.7 million a year ago, the firm earned $6.5 million or 58 cents a share compared with $3.4 million or 33 cents a share in the 1972 first quarter.

At the DEC shareholders meeting here, Olsen said reports of an actual or potential shortage of chips and components were largely distorted by the press, which took remarks at last year's meeting out of context.

At that time, Olsen recalled, he announced an expansion plan that would proceed "as fast as practically possible," and that the only two possible hindrances might be if he couldn't find qualified people, or if the company could get enough parts.

"The press reported that DEC was having trouble finding people and parts," Olsen complained.

Olsen said backlogs are up "significantly" since last year, but he is not concerned over any impending failures of DEC's suppliers to deliver chips or components.

In fact, if there were an imminent danger, DEC would begin making its own components in-house, he said.

Decrease in Prices

He predicted a continuing decrease in minicomputer prices because of better component technology.

If there is a general economic slowdown in 1974, DEC will not suffer as badly as in the last recession, since more of its customers are big, established companies that will not fail to pay their bills, he added.

DEC now has over 30,000 computers installed worldwide, about two-thirds of them PDP/8s and almost 10,000 PDP-11s. The company continues to market most heavily in the industrial and research areas.

Olsen said it would be wrong to push into new markets if the demand of existing customers cannot be met. DEC is "purposely going slowly" in the business area, he commented, "until we're sure we're on firm ground."

Despite his stated confidence in the ability of DEC's suppliers to meet orders, he did acknowledge "mixed feelings" on the backlog, which currently spans the entire DEC line, he said.

1973 Earnings, Revenues Reach Record Highs at GA, Data General

The year 1973 was a record year for minicomputer makers Data General Corp. and General Automation, Inc.

"The outlook for 1974 is extremely favorable," observed General Automation President Lawrence A. Goshorn.

General Automation's revenues for the year rose 90% to $30.4 million from $16 million a year ago, while earnings jumped to $2.8 million or $1.20 a share compared with $1.6 million or 81 cents a share in the previous year.

Before tax credits, which occurred in both years, income soared 148% to $2.3 million from $918,264.

"Sales are up in all of our operations and our backlog at year-end rose 160% to $17.3 million, compared with $6.6 million at year-end last year," Goshorn added.

The firm is doubling its Anaheim plant space.

Data General

At Data General, shipments of the Nova 2 and Nova 840 began during the fourth quarter.

Earnings for the year reached $6.7 million or 83 cents a share compared with $3.9 million or 49 cents a share a year ago.

Revenues rose to $53.3 million from $30.3 million.

In the 16-week period ended Sept. 29, earnings jumped to $2.5 million from $1.1 million, while revenues rose to $19.4 million from $11.4 million in the same 1972 period.

Sales Top $25 Million In Calcomp 1st Quarter

ANAHEIM, Calif. – California Computer Products, Inc. is off to a good start in its quest for annual revenues over $100 million, with first quarter sales totaling $25.7 million.

Earnings for the period showed a marked improvement over the 1972 first quarter loss, reaching $1.3 million or 42 cents a share, including a tax credit of $537,000, compared with a loss of $2.3 million on revenues of nearly $13 million.

The first quarter marks the fourth consecutive quarter in which revenues exceeded $20 million.

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Much of this carnage could be prevented by implementing the security measures advocated in Security Procedures for Computer Systems. The authors cover personnel security, sabotage and data theft, the militants and manmade disaster, the storage and use of magnetic tapes and disks, emergency shutdown and disaster planning, legal protection, insurance and much more.

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GROUP/3
6399 Wilshire Blvd.
Los Angeles, Calif. 90048

Earnings Reports

SPERRY RAND
Three Months Ended Sept. 30

	1973 (000)	1972 (000)
Shr Ernd	$.75	$.57
Revenue	630,701	529,156
Earnings	25,649	19,547
6 Mo Shr	1.43	1.09
Revenue	1,229,706	1,028,885
Earnings	48,151	37,416

MICROFORM DATA SYSTEMS
Year Ended Aug. 3

	1973	1972
Revenue	$3,138,800	$741,864
Loss	1,452,726	2,160,823

AUTOMATIC DATA PROCESSING
Three Months Ended Sept. 30

	1973	a1972
Shr Ernd	$.34	$.28
Revenue	24,471,000	20,106,000
Earnings	2,078,000	1,693,000

a-Restated for pooling-of-interests transactions.

RAPIDATA
Three Months Ended Sept. 30

	1973	1972
Shr Ernd	$.09	$.17
Revenue	2,413,105	1,934,499
Earnings	170,789	310,579
9 Mo Shr	.36	.41
Revenue	6,965,826	5,653,008
Earnings	669,073	763,314

BUNKER RAMO
Three Months Ended Sept. 30

	1973	1972
Shr Ernd	$.34	a$.36
Revenue	77,545,911	62,154,846
Earnings	2,760,462	2,954,338
9 Mo Shr	.95	a1.06
Revenue	215,968,709	187,787,703
Earnings	7,889,270	8,701,907

a-Adjusted to reflect a one-for-three reverse stock split in 1973.

NCR
Three Months Ended Sept. 30

	1973 (000)	a1972 (000)
Shr Ernd	$.70	$.25
Revenue	438,045	389,689
Earnings	16,472	5,746
9 Mo Shr	1.60	.15
Revenue	1,238,853	1,100,980
Earnings	37,286	3,596

a-Restated for accounting changes.

INTERDATA
Three Months Ended Sept. 28

	1973	1972
Shr Ernd	$.18	$.12
Revenue	4,907,200	3,310,400
Tax Cred	45,100	81,000
Earnings	384,100	236,800
9 Mo Shr	.45	.36
Revenue	12,933,500	9,270,000
Tax Cred	50,200	349,700
Earnings	935,000	694,700

DIEBOLD
Three Months Ended Sept. 30

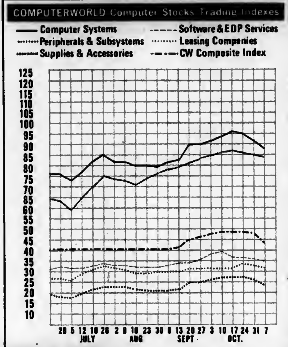
	1973	1972
Shr Ernd	$.51	a$.47
Revenue	44,645,977	38,203,884
Earnings	2,613,923	2,428,666
9 Mo Shr	1.64	a1.19
Revenue	137,374,573	113,654,182
Earnings	8,469,507	6,146,211

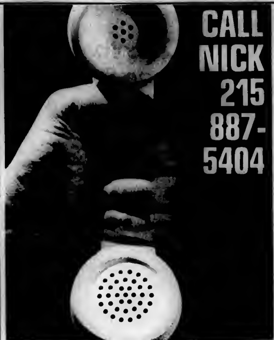
a-Adjusted to reflect a 4% stock dividend paid in April 1973.

ITEL
Three Months Ended Sept. 30

	1973	a1972
Shr Ernd	$.38	$.03
bRevenue	38,444,000	18,870,000
Disc Op	(13,000)	(515,000)
Spec Cred	c599,000	.....
Earnings	2,840,000	232,000
9 Mo Shr	.71	.....
bRevenue	95,299,000	53,707,000
Disc Op	70,000	(3,587,000)
Spec Cred	c1,193,000	.....
Earnings	5,324,000	(2,568,000)

a-Restated. b-From continuing operations. c-Tax benefits arising from discontinuance of office products operation in 1971.





FOR SALE OR LEASE

Qty.	Model	Features	Availability
1	2030 D	Loaded	Immediate
1	2030 E	Loaded	Immediate
1	2030 F	Loaded	Immediate
1	2821 5	3615, 3615, 3615, 7945, 8637, 8638, 8639	December 1
1	2821 5	3615, 3615, 8637, 8638	December 1
1	1416 AN2		Immediate
2	2821 1	3615, 8637	December 10
2	2540 1		December 10
1	2415 1		January 10, 1974
2	2311 1		Immediate
1	2841 1		Immediate
1	370/155 J		April 1, 1974

ALL EQUIPMENT UNDER IBM MAINTENANCE

NVC COMPUTER SALES, INC.
Suite 616, Benjamin Fox Pavilion
Jenkintown, Pa. 19046 • (215) 887-5404

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

EXCH		1973 RANGE (1)	CLOSE NOV 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	211-252	249 5/8	-4 3/8	-1.7
N	COLLINS RADIO	16- 26	24 3/4	+ 1/8	+0.5
O	COMPUTER AUTOMATION	5- 20	14 1/2	-2 7/8	-16.5
N	CONTROL DATA CORP	31- 62	42 3/4	- 3/4	-1.7
O	DATA GENERAL CORP	29- 49	41 1/4	-4	-8.8
O	DATAPOINT CORP	10- 21	16 3/4	-1 1/2	-8.2
O	DIGITAL COMP CONTROL	2- 6	2 5/8	- 3/8	-12.5
N	DIGITAL EQUIPMENT	73-117	112	0	0.0
N	ELECTRONIC ASSOC.	4- 9	4 1/8	0	0.0
B	ELECTRONIC ENGINEER.	6- 14	12	-1	-7.6
N	FOXBORO	23- 49	45 1/4	- 7/8	-1.8
O	GENERAL AUTOMATION	22- 55	33 3/4	-5 1/4	-13.4
O	GRI COMPUTER CORP	1- 3	1 5/8	0	0.0
N	HEWLETT-PACKARD CO	73- 99	93 3/4	-2 3/4	-2.8
N	HONEYWELL INC	94-138	99 1/4	-5 1/4	-5.0
N	IBM	249-360	276 3/4	-3 1/2	-1.2
O	INTERDATA INC	7- 14	11 3/8	- 5/8	-5.2
O	MICRODATA CORP	2- 10	3 3/8	- 1/4	-6.8
N	NCR	27- 46	41 1/2	-2	-4.5
N	RAYTHEON CO	22- 35	30 3/4	-2	-6.1
N	SINGER CO	45- 74	49 3/4	-2 5/8	-5.1
N	SPERRY RAND	36- 56	50 7/8	- 7/8	-1.6
A	SYSTEMS ENG. LABS	3- 8	2 3/4	0	0.0
N	TEXAS INSTRUMENTS	83-135	117 1/2	-7 1/8	-5.7
O	ULTIMACC SYSTEMS INC	1- 11	2	0	0.0
N	VARIAN ASSOCIATES	10- 20	13 1/2	-1 1/4	-8.4
N	WANG LABS.	13- 34	24 7/8	-2 1/8	-7.8
N	XEROX CORP	138-169	142 3/4	-3 3/4	-2.5
	LEASING COMPANIES				
A	BOOTHE COMPUTER	0- 0	1 1/8	0	0.0
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	6- 17	6 3/4	- 7/8	-11.4
O	COMMERCE GROUP CORP	3- 4	3 3/8	- 1/8	-3.5
O	COMPUTER EXCHANGE	1- 1	1/2	0	0.0
A	COMPUTER INVSTRS GRP	2- 8	3 1/2	- 1/2	-12.5
O	COMP. INSTALLATIONS	1- 2	1	0	0.0
N	DATRONIC RENTAL	2- 3	1 7/8	0	0.0
A	DCL INC	1- 3	3/4	0	0.0
A	DEARBORN-STORM	12- 26	17 5/8	-1 1/4	-6.8
N	DPF INC	4- 9	4 1/8	- 1/4	-5.7
O	EDP RESOURCES	1- 3	1 1/2	0	0.0
A	GRANITE MGT	2- 6	3 1/8	- 5/8	-16.6
A	GREYHOUND COMPUTER	3- 6	4 1/4	+ 1/8	+3.0
A	ITEL	4- 12	5 5/8	- 1/4	-4.2
B	LEASCO CORP	8- 18	11 3/4	- 1/2	-4.0
O	LEASPAC CORP	1- 5	1	0	0.0
O	LECTRO MGT INC	1- 2	1/2	0	0.0
O	NRG INC	5- 15	4 5/8	- 5/8	-11.9
A	PIONEER TEX CORP	5- 8	5 1/8	- 5/8	-10.8
A	ROCKWOOD COMPUTER	1- 3	1 1/4	+ 1/8	+11.1
N	U.S. LEASING	18- 36	23 1/4	- 3/8	-1.5

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

EXCH		1973 RANGE (1)	CLOSE NOV 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1 7/8	- 1/4	-11.7
B	APPLIED DATA RES.	2- 4	2 1/4	- 3/8	-14.2
O	APPLIED LOGIC	1- 3	1/2	0	0.0
N	AUTOMATIC DATA PROC	38- 94	60	-1 3/4	-2.8
O	BRANDON APPLIED SYST	1- 1	1/4	0	0.0
O	CENTRAL DATA SYSTEMS	6- 9	8 3/4	0	0.0
O	COMPUTER DIMENSIONS	2- 5	3 1/4	- 1/4	-7.1
O	COMPUTER DYNAMICS	1- 2	1/2	0	0.0
O	COMPUTER HORIZONS	1- 6	2	- 1/4	-11.1
O	COMPUTER NETWORK	1- 5	1 3/8	+ 1/8	+10.0
N	COMPUTER SCIENCES	2- 6	3	- 1/8	-4.0
O	COMPUTER TASK GROUP	1- 2	1 1/4	+ 1/8	+11.1
O	COMPUTER TECHNOLOGY	1- 3	1	0	0.0
O	COMPUTER USAGE	4- 9	4 5/8	0	0.0
O	COMPRESS	1- 2	1/4	- 1/8	-33.3
O	COMSHARE	4- 9	3 1/2	- 1/4	-6.6
M	CORDURA CORP	4- 15	4	- 1/8	-3.0
O	CYBERMATICS INC	1- 3	1 1/2	+ 1/8	+9.0
O	DATATAB	1- 4	1 1/4	0	0.0
A	ELECT COMP PROG	1- 2	3/4	- 1/8	-14.2
N	ELECTRONIC DATA SYS.	29- 56	31 3/8	-1 1/4	-3.9
O	INFONATIONAL INC	1- 2	1/2	0	0.0
O	INFORMATICS	2- 6	5 3/4	0	0.0
O	I.D.A. DATA CORP	1- 1	1/4	0	0.0
O	IPS COMPUTER MARKET.	1- 5	1 5/8	0	0.0
O	KEANE ASSOCIATES	3- 5	3 1/2	- 1/4	-6.6
O	KEYDATA CORP	6- 12	6 1/4	+ 1/8	+2.0
O	LOGICON	3- 7	3 3/8	- 1/8	-3.5
A	MANAGEMENT DATA	2- 5	1 3/4	- 3/8	-17.6
O	NATIONAL CSS INC	15- 42	31	- 1/2	-1.5
O	NATIONAL COMPUTER CO	1- 1	3/8	0	0.0
O	NATIONAL INFO SRVCS	1- 2	1/2	0	0.0
P	ON LINE SYSTEMS INC	12- 25	23 1/8	- 1/2	-2.1
N	PLANNING RESEARCH	2- 7	3 1/8	- 3/8	-10.7
O	PROGRAMMING METHODS	21- 25	21	0	0.0
O	PROGRAMMING & SYS	1- 1	5/8	- 1/8	-16.6
O	RAPIDATA INC	5- 24	4	- 1/8	-3.0
O	SCIENTIFIC COMPUTERS	1- 3	3/4	0	0.0
O	SIMPLICITY COMPUTER	1- 4	1 1/2	0	0.0
O	TPS COMPUTER CENTERS	2- 7	5 1/4	-1 1/4	-19.2
O	TCC INC	1- 1	1/4	0	0.0
O	TYMSHARE INC	6- 13	10 1/4	-1 5/8	-13.6
O	UNITED DATA CENTER	3- 4	3 1/2	0	0.0
A	UPS SYSTEMS	4- 8	3 7/8	- 3/8	-9.8
N	WYLY CORP	4- 11	4 7/8	- 1/4	-4.8
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	12- 34	13 7/8	- 1/2	-3.4
O	ADVANCED MEMORY SYS	5- 23	7 1/4	- 1/2	-6.4
N	AMPEX CORP	4- 7	4 3/4	0	0.0
O	ANDERSON JACOBSON	3- 6	3	- 1/2	-14.2
O	BEEHIVE MEDICAL ELEC	5- 19	5 1/2	0	0.0
A	BOLT,BERANEK & NEW	8- 12	8 7/8	-1 1/4	-12.3
N	BUNKER-RAMO	6- 18	9 7/8	- 1/4	-2.4
B	CALCOMP	5- 18	12 3/8	-2	-13.9
O	CAMBRIDGE MEMORIES	8- 17	16 1/2	-1	-5.7
O	CENTRONICS DATA COMP	13- 38	26 1/2	-3	-10.1
O	CODEX CORP	9- 19	12 1/4	-1	-7.5
O	COGNITRONICS	1- 3	1	- 1/8	-11.1

EXCH		1973 RANGE (1)	CLOSE NOV 7 1973	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMPUTER COMMUN.	1- 4	7/8	-1	-53.3
A	COMPUTER EQUIPMENT	2- 3	1 7/8	- 1/8	-6.2
O	COMPUTER MACHINERY	5- 13	6 1/4	-1	-13.7
O	COMPUTER TRANSCEIVER	1- 6	1 1/8	- 1/4	-19.1
N	CONRAC CORP	15- 32	18	- 7/8	-4.6
O	DATA ACCESS SYSTEMS	1- 3	2	0	0.0
O	DATA 100	9- 19	13 1/2	-1 7/8	-12.1
A	DATA PRODUCTS CORP	2- 5	4 1/8	- 1/8	-2.9
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 1/8	0	0.0
O	DECISION DATA COMPUT	8- 40	10 3/8	-1 7/8	-15.3
O	DELTA DATA SYSTEMS	1- 1	5/8	0	0.0
O	DIVAN CONTROLS	1- 4	2 3/4	0	0.0
N	ELECTRONIC M & N	3- 6	4 1/2	- 1/8	-2.7
O	FABRI-TEK	2- 5	3 1/8	- 3/8	-10.7
O	GENERAL COMPUTER SYS	5- 8	6 1/4	0	0.0
N	GENERAL ELECTRIC	56- 76	63 3/8	-2	-3.0
N	HAZELTINE CORP	4- 9	6 1/8	- 1/4	-3.9
O	INFOREX INC	5- 23	4 5/8	- 5/8	-11.9
O	INFORMATION DISPLAYS	1- 2	3/8	0	0.0
O	INFORMATION INTL INC	10- 15	10 3/4	- 3/4	-6.5
A	LUNDY ELECTRONICS	3- 9	3	- 3/4	-29.0
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
N	MEMOREX	2- 19	4	- 1/4	-5.8
A	MILGO ELECTRONICS	14- 28	20	-2 1/8	-9.6
N	MOHAWK DATA SCI	4- 13	4 1/4	- 1/2	-10.5
O	ODEC COMPUTER SYST.	2- 6	3 3/8	- 5/8	-15.6
O	OPTICAL SCANNING	2- 5	5 3/4	- 1/4	-4.1
O	PERTEC CORP	4- 8	6	- 1/2	-7.8
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	3- 8	4 1/4	- 3/4	-15.9
O	PRECISION INST.	2- 6	3 3/4	0	0.0
O	QUANTOR CORP	5- 10	5	0	0.0
O	RECOGNITION EQUIP	4- 8	4 1/8	- 1/8	-2.9
N	SANDERS ASSOCIATES	7- 18	9 1/8	- 5/8	-6.4
O	SCAN DATA	1- 6	2 1/4	-1	-30.7
O	STORAGE TECHNOLOGY	11- 34	19 1/8	- 1/2	-2.5
O	SYCOR INC	8- 29	14 1/4	-2	-12.3
O	TALLY CORP.	2- 14	3 3/4	- 3/8	-9.0
O	TEC INC	6- 9	7 1/4	- 3/4	-9.3
N	TEKTRONIX INC	38- 55	47	-4 1/8	-9.0
N	TELEX	3- 8	4 1/4	- 1/2	-10.5
O	WANGCO INC	7- 13	11 1/8	-1 3/8	-11.0
O	WILTEK INC	8- 18	6 3/4	0	0.0
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	8 1/4	+2	+32.0
B	BARRY WRIGHT	6- 13	6 5/8	- 3/4	-10.1
B	DATA DOCUMENTS	17- 26	24 1/8	0	0.0
O	DUPLEX PRODUCTS INC	7- 10	8 1/4	- 3/8	-4.3
N	ENNIS BUS. FORMS	4- 8	6	- 1/2	-7.6
O	GRAHAM MAGNETICS	9- 20	12	-1 1/2	-11.1
O	GRAPHIC CONTROLS	8- 12	9 7/8	- 1/8	-1.2
B	3M COMPANY	78- 91	84 7/8	-1 5/8	-1.9
O	MOORE CORP LTD	53- 65	63	-1	-1.5
N	NASHUA CORP	42- 58	48	-1 5/8	-3.2
O	REYNOLDS & REYNOLDS	49- 51	46 5/8	+1 5/8	+3.6
O	STANDARD REGISTER	14- 20	15 1/4	- 1/4	-1.6
O	TAB PRODUCTS CO	8- 23	10	- 1/2	-4.7
M	UARCO	15- 23	19 1/8	-1 1/4	-6.4
B	WABASH MAGNETICS	5- 8	6 3/4	0	0.0
N	WALLACE BUS FORMS	15- 28	19 3/4	+ 1/4	+1.3

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